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JAMES VEITCH.

AN

ILLUSTRATED WEEKLY JOURNAL

OF

HORTICULTURE IN ALL ITS BRANCHES.

FOUNDED BY

W. Robinson, F.L.S., Author of "Alpine Flowers," etc.

"You see, sweet maid, we marry
A gentle scion to the wildest stock;
And make conceive a bark of baser kind
By bud of nobler race: This is an art
Which does mend nature; change it rather; but
The art itself is nature."—*Shakespeare.*

VOL. X.

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CHRISTMAS, 1876.

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MASSACHUSETTS AGRICULTURAL COLLEGE.

TO THE MEMORY OF

JAMES VEITCH,

OF CHELSEA AND EXETER,

THE TENTH VOLUME OF "THE GARDEN"

IS RESPECTFULLY DEDICATED.

W. R.

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THE LATE JAMES VEITCH.

THE true and best memorial to any man is the work which he has done, and few kinds of work that fall to man's lot are more agreeable than that of the horticulturist. If it be true that the man who has planted a tree has not lived in vain, he who introduces wholly new species to our country may feel high pleasure in his work. It has, therefore, occurred to us that the most fitting accompaniment to the portrait and dedication associated with the index to the Tenth Volume of THE GARDEN, would be an enumeration of the more important trees and plants introduced by the late Mr. VEITCH during his lifetime.

TREES AND PLANTS INTRODUCED BY THE LATE MR. JAMES VEITCH.

The following list by no means contains all the trees and plants introduced by Mr. Veitch; on the contrary, it contains but a fraction of them—the selection being restricted to those which still occupy a foremost, and probably a permanent, place in horticulture.

CONIFERS.

Abies Alcoquiana
,, bracteata
,, firma
,, lasiocarpa
,, polita
,, Veitchi
Cryptomeria elegans
,, japonica Lobbi
Fitzroya patagonica
Juniperus rigida
Larix leptolepis
Libocedrus tetragona
Pinus Koraiensis
Retinospora obtusa
,, ,, aurea gracilis
,, plumosa and varieties
Retinospora squarrosa
,, filicoides
Thuja Lobbi
Thujopsis lætevirens
Torreya myristica
Saxe-Gothæa conspicua
Wellingtonia gigantea

HARDY SHRUBS AND CLIMBERS.

Ampelopsis Veitchi
Azara microphylla
Berberidopsis corallina
Berberis Darwini
Ceanothus floribundus
,, Lobbianus
Desfontainea spinosa
Escallonia macrantha
Embothrium coccineum
Eugenia Ugni
Forsythia suspensa
Fremontia californica
Lardizabala biternata
Mutisia decurrens
Pernettya speciosa major
Philesia buxifolia

HERBACEOUS PLANTS.

Begonia Veitchi
,, boliviensis
,, Pearcei
,, Sedeni (hybrid)
,, Vesuvius (hybrid)
Calceolaria amplexicaulis
Delphinium cardinale
Mimulus cupreus
Primula cortusoides amœna and varieties
Tropæolum Lobbi
Tropæolum speciosum
,, azureum
Viola lutea

ANNUALS.

Amarantus melancholicus ruber
,, salicifolius
Blumenbachia coronata
Calandrina umbellata
Collinsia bartsifolia
Collinsia verna
Eschscholtzia tenuifolia
Leptosiphon aureum
Nolana lanceolata
Œnothera bistorta Veitchi
Oxalis Valdiviana
Spragueа umbellata
Whitlavia grandiflora

ORCHIDS.

Acrides Huttoni
,, Lobbi
,, Veitchi
Anæctochilus Lobbi
,, Veitchi
Angræcum citratum
Calanthe vestita
,, Veitchi (hybrid)
Cattleya exoniensis (hybrid)
,, Dominiana (hybrid)
,, Veitchiana (hybrid)
Cypripedium barbatum
,, caudatum
,, lævigatum
Cypripedium Pearcei
,, Sedeni (hybrid)
,, Veitchi
,, villosum
Dendrobium Bensoniæ
,, albo-sanguineum
,, crassinode
,, crystallinum
,, Huttoni
,, Jamesianum
,, Tattonense
,, tortile
,, Veitchianum
Masdevallia Veitchiana
Phajus Bensoni
Phalænopsis grandiflora
,, Lobbi
Pleione lagenaria
Saccolabium giganteum
,, Blumei
,, ,, majus
Vanda Bensoni
,, Dennisoniana
,, cœrulea
,, cœrulescens
,, insignis
,, suavis
,, tricolor

STOVE PLANTS.

Æschynanthus Lobbi
,, pulcher
,, speciosus
Agalmyla staminea
Alocasia Veitchi
Amaryllis Leopoldi
,, pardina
Aralia Veitchi
,, elegantissima
Bertolonia guttata
Croton Disraeli
,, undulatum
,, Veitchianum
,, Weismanni
,, Youngi
Dieffenbachia Pearcei
Dipladenia boliviensis
,, splendens
Dracæna Chelsoni
,, hybrida
,, magnifica
,, Mooreana
,, regina
Gymnostachyum Pearcei
Hexacentris lutea
,, mysorensis
Hoya bella
,, campanulata
Impatiens Jerdoniæ
Ixora salicifolia
,, javanica
,, Lobbi
Maranta Veitchi
,, tubispatha
Medinilla magnifica
Nepenthes sanguinea
,, lanata
,, albo-marginata
,, hybrida
,, intermedia (hybrid)
,, Chelsoni (hybrid)
Pandanus Veitchi
Paullinia thalictrifolia
Rhododendron Lobbi
Sanchezia nobilis var.
Sonerila margaritacea
Urceolina aurea

GREENHOUSE PLANTS.

Bomarea multiflora
Cantua dependens
Clianthus Dampieri
Correa cardinalis
Fuchsia serratifolia
,, spectabilis
Lapageria alba (re-introduced)
,, rosea
Leptodactylon californicum
Lilium auratum
Lomatia ferruginea
Mitraria coccinea
Pleroma elegans
Rhododendron Veitchi
,, jasminiflorum
Rhododendron Princess Royal (hybrid)
,, Princess Alexandra (hybrid) and other varieties
Sarmienta repens
Tacsonia mollissima
Thibaudia acuminata
,, macrantha
,, pulchra

THE GARDEN.

VOL. X.

TEA-SCENTED ROSES.

Many of my brothers and sisters who love the Rose might add to their happiness by a more courageous cultivation of that exquisite variety which bears the name of Rosa indica odorata. A weakly confidence in the hardihood of this Rose, enfeebled, perhaps, by yet more weakly specimens, or destroyed by an abnormal frost (such as that of 1860-1), has caused a common but mistaken impression that it cannot be grown out-of-doors; whereas during my long allegiance to our Garden Queen, and my "Thirty Years' War" with her enemies, I have never, except in the year just referred to (1861), been without a supply of Tea Roses. It is true that they thrive best on a wall—and where will you find such mural ornaments? I will not expatiate on such robust growers as Gloire de Dijon, Climbing Devoniensis, Belle Lyonnaise, and Madame Berard, which will cover a house front with their beautiful blooms (I have 400 or 500 Roses on a tree of Gloire de Dijon now); but not a few of my readers may be surprised to know that, such varieties as Souvenir d'un Ami will climb a 10-ft. wall withstanding the severities of an ordinary winter even in our midland shires, and furnish, as mine has furnished, as complete a covert for the throstle's nest as the Oak for our Royal Charles. Nor is actual contact with the wall a necessity; I have in a border, which adjoins one, and faces south, 100 healthy plants, which have braved the winter (deeply mulched, of course, but with no other protection), and, though only planted in the autumn, are blooming and growing abundantly. These are Adam, Adrienne Christophle, Aime Sisley, Anna Ollivier, Bougére, Catherine Mermet, Comtesse de Nadaillac, Devoniensis, Homer, Jean Ducher, Jean Pernet, Madame Bravy, Madame Camille, Madame Falcot, Madame Margottin, Mesdames Villermoz (white and pink, the latter a sport sent out by my old friend John Keynes as Lettie Coles, and worthy of that true florist), Marie Sisley, Marie Van Houtte, Narcisse, Niphetos, Perle des Jardins, President, Rubens, Safrano, Shirley Hibberd, and Souvenirs d'Elise, d'un Ami, de Paul Neron. These are all budded or grafted on the Dog Rose, and a large proportion are upon the seedling Brier, and supplied to me by Mr. Prince, of Oxford. I am quite sure that this seedling Brier is *the* stock for Tea Roses, and, in strong soils, for all other Roses. If the great Rose nurserymen will overcome their prejudice against a slower process of raising, and the amateurs will overcome their prejudice against an advance of prices which must be made by the vendor, we shall have, in my opinion, a more robust and enduring growth of Roses upon the dwarf seedling Brier than we have hitherto seen in the garden. I speak after a long and patient experience, and surrounded by a crowd of witnesses.

S. Reynolds Hole.

LANDSCAPE GARDENERS OF THE FUTURE.

We have been struck by some recent remarks by Mr. Olmsted on this subject, which we reproduce for their intrinsic merit, and also because we desire to make a few observations respecting them.

It does not follow, he says, that because a man is a clever gardener he must of necessity be a competent landscape gardener, any more than because he is a skilful civil engineer. Sometimes I have had the suspicion thrust upon me by the wording of cards and circulars, that some of these men, of both classes perhaps, in their honest and laudable ambition to become landscape gardeners, were actually ashamed of the term gardener. They described themselves as landscape architects, landscape engineers, rural architects, artists in grounds, &c., &c.; anything but landscape gardeners. And here, by way of parenthesis, let us stick to that good old name, landscape gardener, worn, and honoured, and elevated by Repton, Loudon, Kemp, Downing, Daniels, Bauman, Copeland, and some living men who are not ashamed of it. But to return; suppose we combine the two professions. Putting aside all jealousies, suppose we try the experiment of training, for the future adornment of our common country, a race of men who shall be both well educated, and well trained gardeners and engineers, to say nothing now of more artistic qualifications. Is there anything inconsistent in this idea? Cannot one be both? It seems as thoughtless to say "No" to these queries as it would be to assert that an architect is not a skilful architect because he knows all about carpentry, and painting, and stone-cutting, and plastering, and masonry; or to insist that because a merchant is well versed in the law of contracts, therefore, he cannot be a prosperous merchant. One of the most successful clergymen I ever knew was educated as a lawyer, and he used to say that what little success he might have had in the management of the affairs of his parish, and his friends know that it was anything but little, was due, in a large measure, to his legal training. Of course it is not practicable that all clergymen should be bred lawyers, and yet, if it were so, perhaps it would be no detriment. The thought I would emphasise by these illustrations is this: a landscape gardener cannot be too well educated. There is no danger of his knowing too much. Let him be chemist, botanist, farmer, gardener, architect, engineer, artist, it will not impair his usefulness. He will have need of all he knows, and with it all he will find himself wanting, or if he does not, others will. Not only the artist, but those who employ him, ought to be educated up to a higher level. The relation of lawyer to client, physician to patient, clergyman to parishioner, is well understood and obeyed. The engineer and the architect have their recognized places, and even the land-surveyor, whose processes and methods can be learned in a year, can assert his right to control his work, and be heeded; but the position of the landscape gardener is wherever the caprice or whim of the hour may place him. His employers often have their own notions about the laying out of grounds, and it is right that they should have them: the wise landscape gardener will note and incorporate them into his own designs, whenever he can do so in justice to

his client and himself. But, "shall I not do what I will with mine own?" is too often the exponent of the treatment both he and his work are destined to receive. All who have ever practised in the profession have suffered in this way. Repton wrote, "Of many hundred plans, digested with care, thought, and attention, few were ever so carried into execution, that I could be pleased with my own works." Loudon complains of the nurseryman and jobbing gardener pretending to improve the plan of the landscape gardener, "and having, by dint of persevering and talking, got the ear of his employer, the latter is prevailed on, for quiet's sake, to yield to the proposed alterations, and to admit trees and shrubs in such quantities as in some cases entirely to destroy the effect which the landscape gardener intended to produce." The only way through the consequent embarrassments and discouragements which at times weigh so heavily upon those men who have dedicated their lives to the work of adorning the homes of our beautiful land, seems to be such thorough education and training as shall enable them to command such respect and confidence from those who would avail themselves of their professional aid, as will secure to their advice and plans that deference which is now paid to the opinions of men who are in what are called the "learned professions."

We heartily welcome these observations by a man who has well discharged the debt that every man owes to his profession—Mr. F. Law Olmsted. We agree with Mr. Olmsted that a landscape gardener cannot be "too well educated," but it should be in his own art, we think. Some of the things mentioned by Mr. Olmsted in the "Gardeners' Monthly" should be wholly left out of his education. Horticulture is now such a vast and ramified pursuit that if the landscape gardener knows enough of it, he cannot possibly find time to work in any useful way at arts and sciences wholly apart from his own. I maintain that, on the contrary, there is nothing so dangerous to the beautiful but as yet undeveloped art of landscape gardening than the practice of men who know too much about other arts. Thus, if we have an architect who does us the honour to add the term gardener to that of his own profession, we are very likely to see stones where we asked for Grass, and flowers, and trees. His heart is in buildings, and accordingly he cannot bear to limit architecture to its legitimate use, but brings it into the garden to the invariable ruin of the latter from the artistic or monetary point of view. Hence a thousand things that men will cart away as abominations, ugly, costly, and in all ways hateful, as soon as they understand what pure landscape gardening can do for the willing earth; hence the gardens at Versailles, mouldering, slimy, dead as the state of things that gave them birth—a garden tomb, in fact; hence the fountain and geometrical desert at the Crystal Palace, acres of unclean water-basins, horizons of dead walls, ghastly decay of stone, gigantic water-squirting apparatus, which might well even astonish one of the poor Indians who sell moccasins near the "Falls;" hence such really unmeaning wastes as those of Trafalgar Square and that at the Bayswater Road end of the Serpentine; these constitute a little of what we get by having an architect instead of a landscape gardener. To an artist we are actually indebted for the revival of the absurd practice of using coloured gravels instead of living colour, although the knowledge of the artist properly subordinate to the knowledge of the gardener would be a precious aid to us. It is needful to bear in mind that our benefactors in the above way are not wittingly cruel or unkind, but simply give us the best they know. If they knew the many "tree builders" we have they would probably not build where building is out of place, and then cut the Lime trees into shapes to "harmonise" with the stony dreariness thereby created, as is often the case in France. This brings us to the main point—what the landscape-gardener of the future should know; to begin with, his general education should be such as to fit him for worthily representing his art in any class of society or under all circumstances. But he should be in the most complete sense a gardener. He should know all about gardening, whatever he did not know. He should know the trees after their kind, the stateliest forest trees, the dwarfest flowering trees; know as far as possible their aspect in their old age as well as in youth; know the circumstances suited to each as regards soil and position; know also their value in the landscape, singly, or in groups or groves; know their character in all seasons, whether of spring buds, May blossoms, summer green or autumn glory. To know these things, and to wisely apply the knowledge would, it need hardly be said' give abundant occupation to the best of men. But there are many other things to be known if the landscape gardener is to do justice to his art. In all cold countries, and many temperate ones, the structures devoted to the preservation of the flora of tropical and sub-tropical regions fall within the province of the landscape gardener's art. To design them, or if he merely, as is sometimes the case now, has to instruct an architect, he ought to know practically the wants of plants under such artificial conditions, and as the improvement of the ordinary glass shed with its wood benches and red pots into a beautiful tropical landscape in the case of all large conservatories is a change we may even look for in our own day, so the landscape gardener ought to know the flora of which such miniature landscapes may be composed. Then there is the question of questions for all concerned with gardens—their floral embellishment; is it to be artistic and natural, of materials which we can grow in the open air? To us it seems clear that the mountains, and hills, and plains, of northern and temperate countries must ever be the main source of interest in the gardens of such countries. These must be our storehouse for material; these, in a sense, the sources of our right feeling as regards arrangement. Therefore, no man can be a real landscape gardener unless he has a fair knowledge and a love of the flora of these countries, the plant inhabitants of wood and copse, rock and meadow. Here, also, it will be admitted by all those who know anything of the extent and variety of the subject, that he has something to do. Not less needful for him is a certain amount of educational travel, so to say; as his highest duty and pleasure must ever be the planting of beautiful trees so as to allow them to attain fullest vigour and express their highest beauty, he must study them in their own homes to do them justice in our gardens. The character and associations of a tree are not easily understood by those who have not seen it in its native country; therefore every landscape gardener should see the natural mountain woods of Europe, as well as her forests; should see the rich and varied treasures of the woods in Eastern America; the giant Pines on the great Western ranges; and take advantage of any other opportunities in his way to see the natural forest and copse vegetation of the northern world. To travel southward would be a benefit, too, but it is not essential. If merely as the best way of noting beautiful or suggestive scenes observed in travel of this kind, the power of sketching faithfully and rapidly should be possessed by every landscape gardener. This, however, is indispensable otherwise in his profession. A clear-headed man who loved his work could not travel in beautiful wooded countries without having much precious information photographed also in his mind. Beyond sketching, however, his artistic exhibition should not soar; it is his privilege to make ever-changing pictures out of Nature's own materials—sky, and trees, and water, and flowers, and Grass; and if he would not prefer this to painting in pigments, he has no business to be a landscape gardener. But most essential of all for him is garden travel. He ought to know fairly well all that men in his own way have done and are doing. In the United Kingdom years might be profitably employed in visiting gardens, every one with some feature instructive for the garden artist. Yet bad design has been so prominent in our gardens that good models are most rare. At present it is absolutely necessary to see hundreds of gardens in England before one gets a clear all-round idea of what good design consists. Many places for years praised as models are really examples of what to avoid. But we have to thank accident, diversity of surface, peculiar individual taste, and sometimes what is called neglect, for so neutralising the effort of the geometrical designer for ages, and the peculiarities of bedding out for the past score years, that it is yet possible for the independent mind to distinguish the right from the wrong path. Every visit paid to a garden makes the path of future effort clearer. Artists and writers throw false glories round places famous for size only, or for miles of clipped trees, or for mere extravagance of expenditure—a visit gives the young and independent observer a wholesome antidote. A good engraving or picture may, by the introduction of artistic touches and variety, give a pleasant impression of a place really devoid of beauty

of any kind, as a visit to many Italian gardens would show. Surely the old French styles, as witnessed at Sceaux; at the Grand Trianon; at St. Cloud, or what remains of it; and at Fontainebleau, only require to be seen to be for ever laughed at as modes of designing a garden. But the modern gardens in France, such as parts of Vincennes, the English garden in the little Trianon, and many other gardens in France and on the Continent, deserve both study and praise. Then again some of the public gardens and cemeteries in America, notably those designed by Mr. Olmsted himself, should be seen by the student of landscape gardening; nothing will profit him more. In each country also travel is needed as a guide to judicious planting. Even in a small country like Britain there is an immense amount of wasted energy, owing to ignorance of the trees that will really thrive in any given district. No fairly instructed landscape gardener would, for example, plant trees where they are certain never to attain maturity—a common thing, however, now-a-days. An English landscape gardener would, for example, be the better for seeing the Montery Pine near the sea at Bicton as much at home as on the coast hills of the Pacific; but he ought also to see it shrivelled up in some midland garden before commencing his planting operations in earnest.

Then, to come to more prosaic things, our fairly educated landscape gardener has, as the mere elements of his art, to know all about ground-work, surveying, &c.—the engineering part of the work, as Mr. Olmsted terms it—ground-work, as we call it, he ought to be master of, for there is much loss of labour and needless expense in carrying out improvements, and making changes from loss of time in this respect. Then the design of the kitchen and forcing gardens falls to his lot, and he certainly ought to know and to feel the wants of the worker in these departments, that he may meet him with all the help of modern appliances and knowledge. If our young landscape gardener get so far, if he really should, in the maturity of his powers, practise wisely what he has learnt in so many fields, he may study chemistry, or any other occupation which suffices to absorb the energies of so many earnest and able men wholly devoted to it; but in all seriousness, he would be foolish to do so. We have too much amateur work; too many "jacks of all trades;" too much of that state of mind which accepts and follows blindly, and therefore perpetuates any folly handed down to us, without reasoning, because really uninstructed in the subject—too many lives wasted in trying to know and do a little of everything, lives lost without advancing their own profession, or any other branch of human knowledge one jot. W. R.

HARDY FLOWERS IN OUR PUBLIC GARDENS.—The revolution in taste as regards hardy flowers during the past few years is one of the most remarkable and healthy signs ever witnessed in our horticulture. We regret to see that the change is not so fully shown in public as in private gardens. The collections at Kew and at the Regent's Park are not improving. Some say they have gone back. In neither of these places has any attempt been made to show the numerous beautiful hardy flowers of northern climes in any but the botanical arrangement. We trust the authorities at Kew will soon alter this state of things, as the garden has many advantages as regards soil, facilities for obtaining plants, extent, &c. Nothing would give a more healthy stimulus to the improvement that is being wrought in this way than the culture of many of the finer plants at Kew otherwise than in the botanical arrangement; that, of course, should not be interfered with, but tastefully-arranged groups and masses of the finer things here and there in the other parts of the garden, and even in the shrubbery borders, would be a great improvement.

Flowers for the Children.—For the sake of children have plenty of flowers around your homes. Plant enough so that it may be no sin for the little ones to gather large handfuls and make playfellows of them. One little girl, not four years old then, used to ask me for Pansies before she was dressed in the morning, every day for weeks, last summer. She could hardly count the fingers on one hand, but I used to let her run out before breakfast and gather three or four Pansies. Several times again through the day, she could have as many more, and they all personated characters to her imagination. Other flowers figured also in these plays, but I do not wonder that the smiling Pansy-faces were most attractive. Children should have their own flower-beds as early as possible, and many half-waste places might be made to blossom like the Rose for their sakes, with but little labour.—FAITH ROCHESTER.

NOTES OF THE WEEK.

THE NEW VOLUME OF "THE GARDEN."—Many persons failed in large obtaining complete sets of THE GARDEN for the present year—a reserve of stock laid by for this purpose having been exhausted some months ago. The publisher desires, therefore, to state that the Ninth Volume of THE GARDEN will shortly be published, with complete index and all the coloured plates that have appeared during the half year, which closed with last week's issue.

THE FIRE-TREE IN DEVONSHIRE.—Mr. Luscombe sends us, from Combe Royal, South Devon, branches aflame with the brilliant flowers of this tree. We used to call it a bush, but the branches sent are some of the topmost on the "trees" at Combe Royal. "The weather," Mr. Luscombe writes, "here has been most peculiar, frosts through all the month of May and through part of June, almost unheard of before with us. Many things, of course, are injured—all retarded." Therefore this marvellously beautiful tree would not seem to be very tender.

ST. MICHAEL'S PINES IN SUMMER.—These, contrary to expectation, are now abundant in the London market. This is owing to new steam communication with the island, which enables the fruit to be sent in summer. We need hardly add that English Pine growing must be greatly influenced by these summer importations, and our own growers should take note of it in time.

LYCHNIS LAGASCÆ AS A BORDER FLOWER.—This brilliant and dwarf plant which we have for half-a-dozen years past admired as one of the gems of the rock-garden, seems to thrive freely as a border plant. There is a strong spreading specimen in the mixed border at Chiswick, where it has lived for two years or more. It is still in blossom.

MOSS AND PROVENCE ROSES.—Whatever way fashion may vary as to flowers in our gardens, there is always a demand for Moss Roses in June, and at present one of the most attractive sights in the flower-markets are the bunches, and baskets, and piles of Moss Roses, which are grown in many of the market gardens round London. Several kinds are grown—the white, though not common, and two or three reds. The old Provence Roses are also plentiful, the bunches of the White Provence being very beautiful.

SWEET WILLIAMS.—Mr. A. Dean, of Bedfont, sends us specimens of a well-marked and showy race of single Sweet Williams, some of which we should like to have engraved, if by that process one could give any idea of their bright colours and beauty. The best way, however, of illustrating such subjects is to grow them in our gardens. Those who, like Mr. Dean, select and preserve good "strains" of our hardy popular flowers, do good service. Miss Hope's richly-coloured and dwarf double Sweet William is very fine in London nurseries now, and it deserves to be well known.

THE MARIPOSA LILIES AS CUT FLOWERS.—We have so long considered these plants as somewhat delicate and fragile, owing to seeing them till recently represented by very poor specimens, that we are agreeably surprised at finding they keep for a considerable time in water and open their large, gay, yet delicately-marked blooms freely. Mr. Atkins, of Painswick, sends us a fine yellow Calochortus, like the C. venustus figured in THE GARDEN, but of the most dazzling yellow with brownish-crimson pencillings and markings.

LONDON COMMONS AND OPEN SPACES.—It is high time some authority interfered to prevent the noisy and sometimes disgraceful scenes that too frequently now take place on these. Clapham Common is an example, the bathing here quite near the open road being particularly offensive just now. It would be easy to arrange bathing places in all our large parks and open spaces, so that nothing of this sort need occur, but improvement in the essential requisite of park bathing places drags along so slowly that one cannot be hopeful in this respect at present; yet surely there is nothing which large parks could bestow on the inhabitants of great cities more precious than decent bathing places, curtained by a dense shrubbery from the frequented parts.

JAPANESE GARDEN AT ALEXANDRA PALACE.—Probably few of our readers are aware that a Japanese garden, made by a Japanese gardener, exists at Alexandra Park—that curious hybrid between shop, theatre, and race-ground. This Japanese garden was originally set up at the Vienna Exhibition, and was bought by the Alexandra Park Company at very great expense. There are a few Japanese shrubs in the garden, a good many beautiful stones for the rock-garden arranged in the grassy banks with some taste, and nothing more so far as gardening is concerned. A more useless feature as an adjunct to the Palace it would be difficult to produce, even at great cost. By the way, what a noble Japanese garden could be made by worthily representing the rich garden flora of Japan!

STRIKING CUTTINGS IN SAND AND WATER.

I must admit that I failed in my first attempt, some thirteen years ago, to strike cuttings in this way (see p. 593, Vol. IX.); since then, however, I have repeated the experiment and have succeeded; surely, therefore, it would be wrong to consign such a system to oblivion; I, for one, will not do so, although I like the manure frame for many things—"but not in the month of February!" I well remember the first batch of cuttings which I propagated in the corner of a Melon frame; they consisted of Dahlias, whose names were—picta, formosissima, Lord Liverpool, Lady Kinnaird, Zebra, and Dodd's Mary. These were struck in soil and sand, and seemed at home in the heat of the frame, and up to the present day I do not know a better place in which to propagate Dahlias than a common manure frame. Let us now advert to the water system, or rather the water and sand system. In my first attempt failure took place in two ways:—I used too much water, and my cuttings were not in a proper state for being struck in that way. In order to succeed under the sand and water system, use a common garden saucer, silver or clean-washed sand, and give plenty of light, and 70° or 80° of heat; let the saucers be three parts filled with sand, and then filled up with water; our practice is to take a barrowful of saucers to the sand-heap, and fill them, afterwards arranging them side by side in the propagating house, or in any convenient place near the glass possessing the above temperature. The sand in the saucers being soft, the tender cutting requires no making; it is easily put into the sand by means of the finger and thumb, and as the sand naturally clings to it, it soon emits roots. Hard-wooded cuttings in a tender state may be propagated in the same way as soft-wooded ones. Some years ago when the Golden Fleece Pelargonium came out, I got six small plants of it in July, and continued to strike them in sand and water until next bedding time, when I had nearly 2000 plants. All tender cuttings may be propagated in heat in sand and water, with greater success, and with much more comfort to the propagator, than in any other way. To put tender cuttings into a manure frame in the month of February is by no means good practice. J. Miller, *Clumber.*

Rust on Grapes (see p. 605).—Rust is doubtless often caused through houses being allowed to get overheated either by the influence of fire, or sun, or both; therefore it may easily be caused by too early closing on cloudy days, *i.e.*, if the sun come out powerfully afterwards; but the chief cause is not too early closing, but too late opening. It often happens in early spring, when cold, easterly winds are prevalent, and the sun only shines at intervals, that many people are apt to defer opening too long in the morning, and so allow the temperature to rise too high previous to air being admitted. Then, in order to rectify this evil, a worse one is resorted to, viz., that of opening the lights too widely at once, and admitting a sudden draught of cold, cutting air, and should the sun soon afterwards disappear, the temperature is suddenly lowered to an alarming degree, thus causing a check to the growth of the young and tender fruit. I never remember seeing much rust on late Grapes, nor on those out-of-doors.—C. W. S.

The Tree Kniphofia (K. caulescens).—Mr. Atkins, of Painswick, writes to us as follows respecting this Kniphofia, which he regards as one of the grandest herbaceous plants we have:—In speaking of the specimen of it at Kew (see p. 563, vol. IX.), the flowers are said to be large and ornamental, though perhaps not quite so showy as some of the old Flame-flowers: now the plant at Kew, being old and sadly in want of renovation, is not a fair criterion by which to judge the merits of this Kniphofia: if you saw it in a vigorous state you would, I believe, alter your opinion, and pronounce it to be one of the most effective and noble of herbaceous plants. I have now a fine specimen of it in bloom; it stands between 5 ft. and 6 ft. high, terminating with two flower-spikes, the upper portion of which is rich orange-crimson, and the lower half a clear, bright yellow; it is altogether one of the most striking plants with which I am acquainted. It is generally considered difficult of propagation, but I believe I shall master it.

Philadelphia Exhibition.—The Horticultural Hall here is insufficiently ventilated, and therefore its utility is much impaired. The grounds occupy a fine natural position, and had they been well laid out—which they are not—they would have looked well. Mr. Marnock, for instance, would have left them a perfect Paradise. They are beautifully undulated, and contain a pretty stream of water, which might have been utilised with advantage; the beds, I regret to say, are badly arranged, and the walks are too numerous and narrow, and possess no grace. Everywhere one meets with scarlet and pink, supplied by Pelargoniums, only a few yellow Calceolarias being required to have completed a fair representation of a Cockney garden. Had a few of the English and American nurserymen not combined to improve matters, there would not have been a good bed in the grounds.—W. H.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Among other hardy bulbous-rooted plants now in bloom are many varieties of the red Lilies belonging to the L. dauricum, L. elegans, and L. Thunbergianum types. These occur in Mr. Barr's grounds at Tooting; one variety of L. Thunbergianum, named alutaceum, is remarkably distinct; it bears solitary, erect, cup-shaped flowers of a clear buff colour, on short, stout, leafy stems, rarely more than 6 in. in height. It is one of the many seminal varieties of this race raised by Japanese cultivators, and it is by far the most distinct that we have hitherto seen. The earliest of the American Lilies appears to be L. canadense and its varieties, several of which are just now opening their first flowers. We have seen both pale yellow and deep orange forms of L. canadense, together with the distinct small-flowered form, known as L. canadense parvum, which bears flowers little more than an inch in diameter, and the perianth-lobes are less reflexed than in L. canadense, properly so called. It is difficult to imagine anything more beautiful than the many differently tinted forms of English and Spanish Iris, which have opened their flowers during the past few weeks. The prevailing colours are white, blue, lilac, purple, orange, and brown, but these are blended into an infinite variety of shades and hues, and some of the best Dutch seedlings have broad, stout petals, reminding one more of the gorgeous New Grenadian Cattleyas than of anything else to which they can be compared. Ornithogalum pyramidale is now very pretty, especially in bright sunshine, when every one of its spire-like flower-spikes is a mass of silvery, star-like blossoms. Triteleia Murrayana, a dark purple, later-flowered kind than the better known T. uniflora, is likewise just now very pretty, as are also many of the Alliums and the crimson-purple Gladiolus byzantinus, which, together with many species of Ixias, Sparaxis, and Babianas, has withstood the winter in raised beds at Tooting, and all are now blooming freely. It has been thought that Cape bulbs, of which Ixias and Sparaxis may be taken as types, cannot be grown as hardy plants in this country; but that is a mistake, inasmuch as they succeed perfectly on well-drained, raised beds, and that, too, in a very bleak and exposed situation. The brilliant scarlet Tritonia crocata is now blooming freely in several London gardens, its slender spikes of flowers being very effective. It is to be regretted that Alstræmerias are so much neglected as they are in gardens. We saw a large bed of A. aurea and A. psittacina the other day in full flower, and, although nearly smothered among Nettles, they had a fine appearance; beside them various mixed forms of Hemerocallis—orange, yellow, and red—were just beginning to open their Lily-like flowers. The Yellow Asphodel (Asphodelus luteus) is still a conspicuous object in many suburban gardens, notwithstanding that its first flowers were expanded quite a month ago. Lathyrus rotundifolius is a peculiarly valuable Everlasting Pea, rather dwarfer than the common kind, but with showy, brick-red flowers and good habit. L. californicus bears delicate lilac and white flowers, but is scarcely well marked enough for garden culture. The common Willow Herb is the most showy flower of the season, especially when seen in distant masses. It is, of course, only suitable for rough places, where its rampant roots may do no injury, and where it may not be feared as a weed. The white form is a desirable addition. The Large Seakale (Crambe cordifolia) is a noble hardy herb, with myriads of small white blossoms; it is an excellent plant for the wild garden. Anemone pennsylvanica, though not a showy species, is a valuable one, its white flowers being produced for a long time in early summer. They are all the more pleasing for not coming in crowds. This also is a good plant for naturalisation. The French Honeysuckle (Hedysarum coronarium) is an interesting old plant seldom seen, and now showily in bloom. Calochortus venustus, figured in The Garden (plate VI.), from a drawing by Mrs. Duffield, is full of flowers at Ware's Nurseries, the blooms as fine as those seen on its native hills; so is another brilliant Californian plant, Brodiæa coccinea; also several very interesting Alliums—A. lacteum, A. californicum, and A. acuminatum. The showy and vigorous Orchis foliosa is now in flower; in the Hale Farm Nurseries there are several hundred plants of it.

Foxglove Gladiolus (G. communis).

English Iris (I. xiphioides).

Caucasian Scabious (Scabiosa caucasica).

Yellow Gentiana (G. lutea).

Stonecrop (Sedum acre).

Goat's-beard Spiræa (S. Aruncus).

Officinal Goat's-rue (Galega officinalis).

Umbellate Lychnis (Lychnis Flos-Jovis).

Heart-leaved Crambe (C. cordifolia).

French Honeysuckle (Hedysarum coronarium).

Showy Fleabane (Erigeron speciosum).

Double-flowered Dropwort (Spiræa Filipendula fl.-pl.).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

EDGINGS FOR WALKS AND FLOWER-BEDS.

A GREAT variety of plants may be and are used for edgings according to taste and their adaptability, while, where utility is of more importance than ornament, dead edgings of stone, slate, or other materials are employed. Let us speak of living edgings first. Of these the most common is Box, though it is far less used now than formerly, owing to the labour entailed in keeping it, and because many other and more accommodating subjects have taken its place. Where exactness and formality of design have to be adhered to, there is perhaps nothing to equal Box, provided the often-occurring blanks are made up regularly and it is kept in good order by the shears, for a neglected Box edging sadly mars the appearance of a garden, and those who cannot afford the expense of keeping it as it should be should dispense with it altogether. In a kitchen garden, where the productions are measured by a debtor and creditor account, such an edging for the walks is altogether out of place; yet in hundreds of large gardens it is laid down by the mile, crops are neglected that it may be attended to, and weeks and weeks are spent annually in trimming it; indeed, it is the most expensive item in that department. The treatment of a Box edging is simple if it is well laid out at first, and this is a work of difficulty to some. The ground should first be made up to the required height, which is usually the level of the walk or border, and in doing so the soil must be trodden firmly with the feet, and afterwards made flat and even with the back of a spade guided by a tightly-stretched line. This being done, the line should be pegged down, whether the edging be straight or curved, exactly where the Box has to be laid, and a perpendicular trench, about 6 in. deep, cut out, keeping the back of the spade to the line cutting on the walk side, and taking care that the edge of the bed or border is left intact, which will depend upon whether the soil has been previously trodden well or not; but without a clean and straight-cut edge, Box cannot be laid well. Have the Box split up into thin pieces 5 in. or 6 in. long, with roots to each ready for use, and lay it thinly and regularly along the trench, keeping the tops about 1½ in. above the walk; and holding the pieces securely against the firm edge of soil with the back of the left hand, till you have packed as far as the finger ends, fill in with the right, pressing the soil firmly to the roots. Then move on another hand's length, and so on till all is finished, and leave all levelling up and watering till the last. Box should be laid just before it begins to grow in spring, or in September or October, and it should be cut in June.

A good substitute for Box is Ivy, and the variety called Hedera maculata is the best, being variegated, and just sufficiently free-growing to furnish well. We have some hundreds of yards of it laid down here, and very bright and ornamental it is, and it can be kept with about a tenth of the labour required by Box, or less, while blanks never occur in it. The plants were struck one autumn, planted out the following year a yard apart, pegging a limb each way, and we had an edging at once. It is used chiefly in the kitchen garden, and the only keeping it gets is the cutting off of straggling shoots with the spade or hoe when the borders are cleaned, and the shearing of it down to a bare thin line in April; after that it puts forth fresh green foliage, looking like a wreath, and far surpasses Box in appearance. For encircling flower-beds, or for division lines, it is excellent, and it can be kept as trim and exact as desired with little trouble, while there is no stiffness of outline about it. Among other edgings of the shrubbery class is the common Bilberry or Blaeberry (Vaccinium Myrtillus). In a tastefully laid-out garden, where some of the beds were edged with various kinds of shrubs, the Bilberry was one, and it grew well, although it was clipped like Box. It likes a peaty soil, but grows well enough on a rather dry loam, and leaf-mould suits and promotes its growth. In the garden above alluded to neat edgings of Oak were also a feature; though leafless in winter, it had a good effect in summer, and was kept low by being occasionally pruned. The Common Heath (Erica vulgaris) is an accommodating subject for an edging, but peat or leaf-mould should be added to the soil in which it grows. In some gardens it is used for scroll and pattern work, and lasts long in spite of constant clipping. Both Yew and Laurel make good edgings, and are adapted for flower gardens where edgings are used. Both furnish well, and retain their density for a long while, especially the Yew, of which there are edgings here that have lasted for twenty years, and, though always kept down to a height of 6 in. or thereabouts, they are yet as stiff and dense as a cushion. In forming edgings of either of the above, neat small plants should be planted in November, or March or April, setting them thickly together, and close upon the surface of the soil. Afterwards they may be trained into shape—angular, round, or square—and about midsummer, when they have grown and filled up, another trimming will make them more perfect. Such edgings are usually trimmed once or twice during the summer. Many other trees and shrubs might be used for edgings, their adaptability for such a purpose being judged by their habit. No doubt the close-growing habit of the Box and Yew first suggested their usefulness in this respect; but these qualities are by no means essential to a good edging, for, by clipping and pruning it can always be made almost anything one likes. Next to shrubs come Alpine and herbaceous plants, some of which make good edgings. Among the best are Double Daisies, Saxifrages, Thrift, Arabis, Phlox procumbens (a beautiful plant when in flower, and neat), Auriculas, Primroses, Czar Violet, Gentian, Lithospermum prostratum, Forget-me-nots, and others. All these are common, and easily and speedily propagated by division, except the Lithospermum, which strikes freely from cuttings outdoors. They should be planted in thin lines, for they soon spread, and periodically they should be lifted, divided, and replanted. Hardly enough is made of these kind of plants as edgings. The crimson and white double Daisies, for example, are perfectly charming for a long while in early summer, and they increase so fast, and are so easily grown, as to come within the reach of every one. In a "Lady Corisande's" garden any or all of the above would be appropriate, and they have the recommendation of being all perfectly hardy, and needing little attention.

Let us now advert to dead edgings. In the flower garden these are inadmissible, unless on the parterre, and then they must be of stone, and in keeping with the other architectural adjuncts of the situation; but in the kitchen garden they are the most useful—not that edgings can be considered indispensable in that department, for the less extensive they are the better; but along the principal walks, which usually communicate with the dressed grounds, and which as often as otherwise are backed by flower borders or fruit trees, some kind of division is required. Besides, many small proprietors like to have their kitchen-garden walks trim for other reasons, and dead edgings are very commonly used, because they give little trouble and do not harbour vermin. Burnt tiles with a bead on the top are often used for the purpose, because they are easily procured and cheap; but they are useless, for the frost breaks them up in a couple of years unless they are very hard burnt, and then they are not often straight. A thin kind of tile, made of fireclay and glazed, is also used, and is better, but, as a rule, all the burnt clay edgings are to be suspected. Terra-cotta does stand fairly, but it is expensive. Stout blue slate, with sawn edges, is the neatest and most enduring; this, too, is expensive at first, but its great lasting properties are a compensation, and it can be had in long lengths, and is easily laid. Where stone is abundant it is excellent for edgings, if tolerably hard. In all quarries there is generally a quantity of refuse which might be used for such purposes. If they are about the same thickness—and they are generally pretty uniform in this respect—pieces of all shapes and sizes may be used, and in laying them down do the same as masons do when building a rough-hewn wall: take the pieces as they come, and stick them in close together, keeping the tops just above the ground-line. When finished a rustic edging will be the result, but it will look just as well as any other made of more costly materials, and be a great deal cheaper. The late Mr. Charles M'Intosh, author of the "Book of the Garden," had the edges of the walks in some parts of the extensive kitchen gardens at Dalkeith laid simply with oblong water-worn stones from the river-bed. The stones were all selected about the same size, tolerably heavy, and were laid end for end along the walk side; and well they served their purpose, which was simply to keep a clear division between the soil and the road. Moreover they always looked

clean and trim, required no keeping, and the stones were easily replaced if they happened to be dislodged. A single row of stones is sufficient; but, if an even outline be desired, smaller stones placed in the corners and spaces between the large ones where these occur, will effect that object. Of the manufactured tile edgings the most enduring consist of slabs of pressed asphalte, in pieces 3 *ft.* long and 1½ in. thick, made plain or ornamental as desired. We have had them in use for about ten years, and not one has given way in the least. They are, however, rather expensive, costing about 8d. a yard. In the more frequented alleys of the kitchen garden, where edgings are desired, vegetables themselves may be employed; a border of Parsley, for example, is neat enough and green enough; then there are Kidney Beans, Beet, Endive, and Lettuce. Edgings of any kind always, however, entail extra work; and in kitchen garden by-walks they are not at all necessary.—"Field."

Palmate Saxifrages.—I was much pleased to see the notice by "Salmoniceps" of Saxifraga geranioides (see p. 561, Vol. IX). There is no doubt the one alluded to is the true S. geranioides, confounded with or erroneously called S. paniculata and S. ladanifera, a fine plant, but certainly not the finest of the section, the flowers of which are the most beautiful among all white-flowered kinds. A miniature one in this group, and a charming one, is S. ceratophylla, a globular little bush, covered with panicles of flowers of snowy whiteness, and ivory-like texture; but by far the handsomest of the section is S. ajugæfolia, which forms a dense, low-growing cushion of beautiful, rather rigid foliage, covered with silvery panicles of snowy flowers which are thrown out of the plant at every possible angle, giving it a most elaborate, tied-out appearance.—THOMAS WILLIAMS, *Bath Lodge, Ormskirk.*

Prickly Bindweed (Smilax aspera).—In reply to an inquiry recently made (see p. 467, Vol. IX.) with regard to an evergreen climber with scarlet berries, found on the shores of the Mediterranean, the following fact may confirm the correctness of its having been called Smilax. In the valuable and unique work of the distinguished Mary Granville (Mrs. Delany) consisting of ten vols., and containing 100 plants in each vol., a plant, entitled Smilax aspera, or Rough Prickly Bindweed, exactly coincides in appearance with the description of the evergreen creeper enquired after. The specimen alluded to was gathered when in flower, the flowers being greenish-white, and very minute. The coloured plate in question is dated 1778, and was made from a specimen in the collection of plants formed and maintained by the Duchess of Bulstrode. The work mentioned above contains numbers of wild flowers with the Latin, and, in most cases, the English names attached to them, and among them—one of the most beautiful—is a very small Tulip, entitled Tulipa sylvestris. The petals of this are very much pointed, and white-tipped, and edged with crimson and yellow.—LL.

Autumn-sown Annuals.—Autumn-sown annuals are now in great beauty. As has been repeatedly recorded in your columns, the only way to grow hardy annuals to perfection is to sow in August or September, protect slightly through the winter, and transplant into their proper places very early in the spring; or, where possible, sow in the places they are to occupy, and thin well out. This last operation is indispensable. A single plant of Nemophila thus treated will, at this season, occupy a square yard of ground, and be covered with blossom—and such blossom! I enclose one or two specimen heads of N. maculata, which will compare favourably with Nemophila sown in the ordinary crowded patches. [The blooms received were remarkably large and fine.—ED.]. Leptosiphon roseus, sown last August, is now a mass of clear rose. There is a bed here of Spanish Iris and Gladiolus mixed, carpeted with the Leptosiphon, which makes a wonderful bit of colour. The annual will last till the Gladiolus flowers. We too seldom see combinations of this sort, but it is one of the best modes of employing annuals of the lowly stature and compact growth of the Leptosiphon.—SALMONICEPS.

The Immortelle Plant.—The Immortelle Plant (Helichrysum orientale), a native of Asia, has been known in Europe since 1629. Its flowers the symbols of friendship, or tribute to talent and genius, serve to make the garlands of Immortelles which ornament the tombs of the dead in various countries. It is cultivated in France, in the communes of Lower Provence, where the soil slopes towards the Mediterranean. It blossoms about the month of June. It suffers from heavy and continuous rains, and only vegetates well on light, permeable soils. It is propagated by offsets, which are separated from the old stocks. The gathering of the flowers is made in the first days of June, before the bursting of the buds. As the flowers, which are insufficiently formed or too full blown, are rejected by the trade, it is important not to cut either too soon or too late. The collection is made by women, who tie them in small bundles, which are ordinarily dried on the walls of the enclosure. Finally, young girls are employed to remove the down which covers the ramifications. A kilogramme (nearly 2½ lbs.) of these plants contains about 400 stems, each containing about twenty flowers. Each growing tuft of Immortelles produces sixty or seventy stems. A hectare (2½ acres) will contain 40,000 tufts, producing annually 2,400,000 to 2,800,000 stems, yielding 5½ to 6½ tons in weight. This pretty plant is the true Everlasting-flower, and is quite hardy on all of our soils. It is also a good rock-plant.

Wild Gardening.—This is beginning to engage the attention of all lovers of natural beauty, apart from the formal style which has been so much in fashion of late years. Although in most places of any extent there are wild or natural spots known as the wilderness, the maze, &c., yet none of these with which I am acquainted contains all the features necessary to make up a really good wild garden. For several months readers of the THE GARDEN have had their attention directed to this subject, as week after week the beautiful woodcut representations of our hardy flowers have been given; the wealth of floral beauty that we possess in that way is really marvellous. Those who have seen much of our wilds and woodlands can conjecture what a wild garden would be like, composed of even native flowers; much higher must the beauty of such a garden be if we select as we may from the beautiful hardy flowers that inhabit other cold countries too. Many spend large sums annually upon the labour and decoration of their gardens, and yet their beauty in many cases is but transitory and uncertain compared with that of a wild garden, in which our native plants and hardy flowers from other lands combine to make a perennial floral feast. It is not to be supposed that a subject of this kind will at once become fashionable, but there is abundant evidence that in many gardens a simpler and more natural taste is displaying itself, and I am sure that every cultivator will hail with delight the advent of some such change.—J. THOMPSON, *Shawdon, Alnwick.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Golden Columbine (Aquilegia chrysantha).—This is now flowering with me for the first time, and is so really good and singular that I hope never to be without it again. It is far more robust than A. cœrulea, but a near relative. It promises to be more enduring, as my young plants have withstood some very severe weather. It is one of the few new plants that justify by their merits the seedsman's introductory flourish.—SALMONICEPS.

—— THIS, one of the best of Columbines, should find a place in every garden. It is tall and robust and blooms abundantly, the flowers being nearly erect and prominent lemon-yellow and showy. It is easily raised from seeds, which should be sown in pans in May, and the young plants planted out in the border in autumn. A selection of some half dozen kinds of these robust Columbines, including chrysantha, glandulosa, and canadensis, would add much to the variety of the hardy border.—D.

Great Feather Hyacinth (Muscari monstrosum).—In 1872 I got some bulbs of this curious Feather Hyacinth from Holland. They bloomed abundantly the next year, but since then, though the foliage is abundant, of flowers there are none. Is it generally difficult to flower in this country?—SALMONICEPS.

Geranium platypetalum.—This is one of the most showy and beautiful of border plants now in flower. Its blooms are produced in trusses of considerable size, each bloom being 2 in. in diameter and of a pleasing violet colour. The plant is perfectly hardy, and is well worth attention.—P. G.

A Pacific Rose.—It is stated that a Rose was recently plucked from a bush at the Royal Horticultural Gardens, in Honolulu, which measured 28½ in. in circumference. This Rose bush blooms only once a year, and the blossoms are nearly all of an equal size. The bush was brought from England in early days, and from it a great portion of the bushes in the islands have been raised.

The Mountain Speedwell (Veronica repens).—This is a veritable gem on rockwork, and in the Alpine garden; when well established it produces a perfect carpet of flowers, cup-shaped, and in colour white, tinted with lavender. It is indigenous to the Highlands of Scotland, where it thrives on the rocky plateaus. A cool, shady spot suits it best.—A. D.

Growing Gentiana verna among Stones.—A few years ago, Mr. Williams, of Ormskirk, a well-known cultivator of choice hardy flowers, informed us ("Gardeners' Magazine") that the lovely Gentiana verna made the most satisfactory growth when planted between pieces of stone. We began by measuring out a strip of ground a foot in width and several feet in length. From this strip the soil was removed to a depth of between 2 in. and 3 in., and in the trench thus made we placed a number of stones. These were put about an inch apart, and so arranged that they were nearly level with the surface of the surrounding soil. The crevices between the stones were in due course filled with fine soil, and this was heaped up a little above the surface, so that with the back of a spade it could be beaten quite firm. Small pieces of the Gentian were dibbled in, and during the first summer the plants were supplied with water, but since then they have been well able to take care of themselves. At the present time every particle of the soil in the miniature bed is hidden by the foliage, and the plants themselves are solid with bloom.

THE FRUIT GARDEN.

HINTS ON GRAPE GROWING.

THERE are a few essential points necessary to be observed in Grape growing in order to make sure of good fruit in quantity, without the accompanying pests of red spider, thrips, or mildew. Grapes may be produced in any kind of soil in which ordinary vegetables will grow; but if it be very open in texture, plenty of liquid manure and clean water must be given to keep the Vines in good bearing condition. Large bunches from Vines on such soils need not be looked for, but they will be large enough for all ordinary table purposes, and both colour and flavour will be all that can be desired. At least 2 in. of water should be applied to such borders once a fortnight during dry weather; this is the best way of keeping clear of red spider and other insects. The points of greatest importance in Grape-growing in any kind of soil are free drainage, unlimited supplies of water during growth, means of ventilating freely, and sufficient artificial heat to ripen late crops. The value of good drainage is too well understood to need comment: as regards water, we have the opinion of one of our highest authorities on Grape growing, that the healthiest Vines and the best fruit are produced in districts where the rainfall is greatest. When the drainage is in good working order, Vines in full growth during the summer months require a large amount of water; 2 in. once a fortnight is, as I have said, the least quantity borders composed of light soils should have given them. Soil of a more adhesive character will not require water so often, but in that case 3 in. should be given instead of 2 in. Never allow the soil to become dry; not even on the pretence of ripening the wood, for that must be done without in other respects damaging the Vines; nor on that of resting the Vines during winter, for, practically, they never rest. The advantages of plenty of fresh air are too much lost sight of; with copious supplies of water to the borders, and an unlimited command of fresh air, successful Grape culture cannot fail to be the result. I have known vineries to be never closed except during frosty weather or whilst the Grapes are hanging during damp weather. Where early Grapes have to be produced at a certain time, of course a good deal has to be sacrificed in order to attain the end in view, but in the case of second early crops which ripen during summer, and late ones, the more fresh air that can be admitted the better. A temperature of from 75° to 85° during mild weather, with all the air possible circulating through the houses, is much better than a warmer one with less ventilation. The fashion of "shutting up" at particular hours, causing a sudden rise of temperature, ranging probably from 90° to 110°, is unnatural, and therefore not to be recommended. Whilst the temperature out-of-doors is as high as that in which forced Grapes succeed, no fear need be entertained of admitting plenty of air; for example, on warm days, when the temperature in the shade stands at 70° till 8 p.m., nothing is gained by shutting up vineries early; I have even seen them open up to 10 at night. The results expected from this treatment are strong Vines that will bring to maturity any reasonable amount of crop with impunity, foliage free from red spider and similar pests, and wood that ripens naturally without any drying up at the end of the season, whilst the crops are ready for use as quickly as if the most approved mode of air-giving, "reducing," and "shutting up" were adhered to. The temperature in which to ripen Grape crops in perfection must be warm, but at the same time air should always be admitted in amount proportionate to the state of the weather. As regards syringing, it has not a good point to recommend it; all our late Vines have grown so far without any syringing even to cause them to "break." Damping paths and borders even should be omitted during dull or rainy weather, as it causes the foliage to feel the effects of the sun more keenly when brighter days set in. PRATICIEN.

The Setting of Melons.—For some years during the usual process of setting the fruits of the Melon, I have frequently observed that blossoms that were never touched set their fruits just as well as those that I had been so careful in artificially manipulating. Being anxious to test the thing further I this year did not touch a single bloom of Melon plants that were in frames; the plants were strong and healthy from the first, were pegged out, stopped in the usual way, and as soon as they developed plenty of fruit they were kept rather drier than usual, and were well ventilated. The result was, that every fruit set, and as fine a crop of Melons as I have ever had is now swelling off. I should like to hear the opinion of some of your numerous readers as to whether artificial fertilisation is really necessary, not for Melons only, but for the setting of our hot-house fruits generally.—H. HARRIS, *Denne Park Gardens, Horsham.*

The Versaillaise Currant distinct.—I have been much interested, and equally surprised, in reading the report on Red and White Currants fruited at Chiswick in 1875, and published at page 382. La Versaillaise is made a synonym of the Red Cherry; as grown here the two are very distinct varieties, but when it is stated that the berries "are produced very sparingly, the bunches frequently consisting of only one berry," and "unsuited for cultivation in the open ground," but that "grown against a wall it is more satisfactory," I hardly know what to think. Certainly your English climate must be cold that this Currant should require the protection of a wall. Here the Cherry Currant grows like a weed, making short, stocky, dwarfish bushes, less liable to break than others, and they are loaded with bunches which are short, containing from eleven to thirteen berries nearly as large as small Cherries. No variety grows better, none bears much better, none has larger berries, and none is so sour and unpalatable with the exception of the Gondouin. La Versaillaise, on the contrary, makes long, pretty stout shoots, makes a larger-sized bush, bears very abundantly, the bunches usually 4 in. to 5 in. long, containing from fifteen to eighteen berries, and the berries nearly or quite equal in size to those of the Cherry Currant. Both varieties were described and figured in the "Magazine of Horticulture" more than twenty years ago. La Versaillaise is decidedly the best Currant yet introduced. As there is great confusion among dealers in regard to the two sorts, possibly the Royal Horticultural Society obtained a spurious La Versaillaise, but the non-productiveness of the Cherry Currant under Chiswick treatment seems to me unaccountable.—C. M. HOVEY, *Boston.*

How to keep Birds off Small Fruits.—I remember informing your readers a year or two ago, that small and cheap fireworks—squibs, and better still, crackers, have been found very efficacious aids in my garden, in the season of small fruits. Though we use nets freely there is much that cannot be so guarded, and as birds have always reared their young, and ceased singing by the time Strawberries, Currants, and Raspberries ripen, we drive them away by crackers and squibs, discharged early in the morning, at intervals, and again in the afternoon. The birds betake themselves to the Turnip and Potato fields to feed upon the slugs there, as they were allowed to do in the garden previously, which is consequently never injured by those slimy visitants. It is hardly necessary to say that sparrows may be scared just as easily by squibs and crackers, which lie smouldering and emitting an alarming scent of gunpowder long after the explosions have ceased.—RALPH CARR ELLISON, *Durham.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Abercairney Seedling Grape.—Some time ago I was favoured with a few cuttings of this, in every way, excellent Grape. The type is that of the West's St. Peter's, but enlarged in form. It is scarcely known in England, though often met with in Scotland. The Vine here is in a 10-in. pot, and bears bunches of Grapes, each of which will weigh about 1 lb or 1½ lb. It sets freely, and colours well, the latter being the bluish black of the West's St. Peter's.—R. GILBERT, *Burghley.*

Melons Splitting.—There is no doubt that the splitting of Melons just before ripening proceeds from different causes. In a Melon pit here I used to have many fruit split, but at last I found out one of the causes of the evil, from which I have since been nearly free. When the fruits hanging from the trellis began to get heavy, they were supported by a thin, square bit of wood, suspended by wires fixed at each corner to the trellis. Owing to the fruits resting on their ends on this piece of timber when the plants were syringed, the water lodged between the board and the fruit, and caused them to split just at the end. Now the syringing is given over before the ripening process takes place, and the fruits, being placed on their sides on the boards, never split as they used to do. —W. TILLERY, *Welbeck.*

Origin of Pears and Apples.—The Pear (Pyrus communis) and Apple (Pyrus Malus) are found in their wild state in the mountain woods of the greater part of Europe, and from these indigenous species have been raised the whole of our orchard and garden varieties. Their amelioration by cultivation, and the perpetuation of varieties by grafting, have now been going on for three thousand years or more.

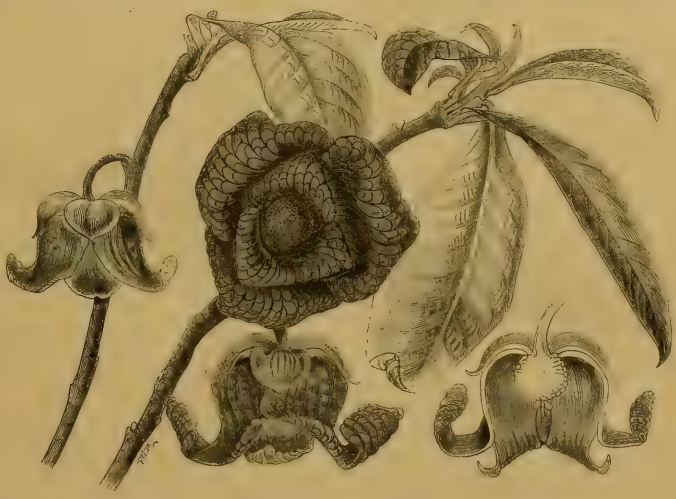
The Currant Moth.—My garden has been overrun this season by a caterpillar, of which a specimen is sent herewith. It entirely destroys the foliage, and leaves the bushes quite bare and dead, or in a dying state. What is its name?—T. M. W.—[The insect which you have sent us is the Common Currant Moth—Abraxas grossulariata.]

TREES AND SHRUBS.

THE NORTH AMERICAN CUSTARD APPLE.

(ASIMINA TRILOBA).

THIS singular tree, a near relation of the West Indian Anona, has flowered quite recently in the open air in Messrs. Osborn's Nursery at Fulham, a fact to which we have already directed attention (see pp. 563 and 570, Vol. IX). The accompanying representation, made from freshly-gathered specimens of it supplied by Mr. Robert Osborn, will give our readers some idea of the general appearance of the plant when in blossom. Loudon describes it as a small tree densely clothed with smooth, glossy, oblong leaves, which lie one over the other in such a manner as to give a peculiarly imbricated appearance to the entire plant. The flowers, he says, are campanulate and drooping, and appear before the leaves are fully grown; the outer petals are purple or brownish, like stamped leather; in some plants very dark brown, and in others quite light-coloured, inclining to yellow. In America, where it grows on the banks of streams in the middle, southern, and western States, the fruits ripen in the beginning of August, and are 3 in. long by about 1½ in. thick, irregularly oval in shape. They contain a yellow, sweet pulp, in the middle of which lie about twelve seeds, divided by as many thin membranes. In this country the Asimina forms a slow-growing deciduous shrub, easily raised from imported seed, and well worth a place in all good gardens. In the rich deep valleys near the Schuylkill River, it forms thickets several acres in extent, and it is also common in Kentucky and Tennessee, where it attains a height of from 20 ft. to 30 ft., the trunk being often from 6 to 8 in. in diameter. Three other species are described in Loudon's "Arboretum," namely A. parviflora, A. pygmæa, and A. grandiflora, but it is possible that these may be merely different forms of the plant now under notice. B.



The North American Custard Apple.

AN ADDITION TO HARDY SUB-TROPICAL PLANTS.

(CORDYLINE BANKSI).

THOSE of our readers who have seen the giant tufts of Phormium tenax at Fota and other places in the south of Ireland, or have made the acquaintance of the fine groups of Dracæna australis in the People's Garden, Phœnix Park, could not fail to be impressed with their value for producing novel and striking effects in the landscape of the home park. For affording a pleasing diversity, and giving to bits of park scenery a sub-tropical aspect, not merely of a month or two's duration in summer or in early autumn, but permanently, such hardy, fine-leaved plants as these can scarcely be too much appreciated. If judiciously availed of, they are grand subjects in the hands of the landscape gardener or man of taste. We are likely to be indebted to New Zealand for much more in this way. In Dracæna australis it has given us a graceful and thoroughly proved hardy subject, and from the allied genus Cordyline we have reason to think there comes to us another equally hardy, to direct attention to which is the immediate object of our present writing. There is just now flowering in the open ground at Glasnevin, for the first time in these countries, if we mistake not, a plant of Cordyline Banksi, Dracæna erythrorachis of some. Its hardihood appears to be unquestionable, and we think there can be no doubt whatever as to its value as an addition to the above-mentioned stately members of the New Zealand Liliaceæ. The plant at Glasnevin forms a large, spreading tuft—the stem or arborescent character not yet assumed. The leaves are lanceolate, some 4 ft. or 5 ft. long each, spreading, and in colour somewhat like those of Phormium tenax. The Glasnevin plant has thrown up four flower-spikes betwen 4 ft. and 5 ft. long, compound, and curving gracefully outwards. The ramifications are numerous, each beaded with innumerable, small, sessile flowers of pearly whiteness, to be succeeded by small berries of the same colour. We regard this as a most valuable gain to this most desirable class of hardy plants. For having been the first to test its hardihood, to flower it, and direct attention to its value for outdoor work in combination with water and woodland scenery, Dr. Moore in this, as in many other instances, has done good public service.—"Irish Farmers' Gazette."

Groups of Trees in Pastures.—The only reason advanced against shade trees in pastures is, that cows are inclined to spend too much of their time under them, and consequently give less milk than they would if no shade existed. This is not the case. Cows that rest a portion of the time under trees feed more at night than those do that have no shade in their pastures. The more comfortably and quietly we keep our cows, the more milk they will produce, and we contend that cows that have a shady group of trees to lie under, will produce as much milk as cows do without shade.—"New England Farmer." [In many places of limited extent it is often desirable to extend the planting beyond the garden portion of the grounds, and one is glad to see that it may be done without injury to the grazing interests. We look forward to a time when the whole area of a farm or demesne will be so arranged as to ensure the greatest amount of landscape and tree beauty possible under the circumstances.]

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Benthamia fragifera at Fota Island.—We are indebted to Mr. Payne Jennings for a photograph of a fine specimen of this tree in Mr. Smith Barry's garden at Fota, Co. Cork. It is a handsome, spreading specimen, apparently about 30 ft. high, and must be a remarkably interesting sight in flower or fruit.—V.

Kalmias as Water-side Plants.—I find that these rank amongst the best possible plants for moist ground, by the side of water, or for low-lying situations where they receive partial shade. Although they grow best in sandy peat, yet they not only thrive but grow exuberantly in sandy loam, where the situation is low and moist. When seen in good condition, both Kalmia latifolia and K. myrtifolia are unquestionably amongst the most pleasing of dwarf American shrubs, and indispensable to every garden where handsome flowering shrubs are cherished. These Kalmias are also proof against the attacks of game; even rabbits do not molest them.—W.

Dynamite and Trees.—Dynamite is, it is said, being used to uproot a number of fine old trees on the Duke of Hamilton's estate, and the process is remarkably expeditious.

THE KITCHEN GARDEN.

FORCING TOMATOES.

THERE is a growing demand for Tomatoes, which in our climate will hardly be supplied by means of open-air culture alone; but their cultivation under glass is so simple and easy, and the result so certain and satisfactory, that in all well-appointed places the time is probably not far distant when Tomatoes will be as indispensable at all seasons as Cucumbers now are. They may be advantageously employed to clothe the backwalls of fruit-houses where early forcing is carried on, and where sufficient light can be had to ripen the fruit. We make a sort of catch crop of them, and therefore, for the sake of convenience, grow them in pots limited in size, but where a small house could be devoted to their culture they will do best planted in a narrow border and trained up within 15 in. or 18 in. of the glass, in the same way as Cucumbers usually are; but, if well managed, Tomatoes will be a more permanent crop than Cucumbers. It is due to their almost exclusive culture in the open air that they have hitherto been looked upon and treated as annuals. The Orangefield is the earliest I have yet grown, and it is especially suitable for culture in pots in a confined space. A couple of dozen pots of it will yield a large supply that will continue ripening in succession for many weeks; we use 8 in. pots, as being more convenient for the position they occupy than larger ones, but I do not attach much importance to the size of pot, as I would undertake to produce a good crop in 6-in. pots, only with small pots rich top-dressings must be given and unremitting attention be paid to watering. On account of the Tomato's almost total immunity from the depredations of insects, no one need fear to introduce it into houses occupied by other plants; in fact, I believe their introduction to be a positive advantage, for I have never found insects troublesome, especially aphides, in a house partially filled with Tomatoes. I do not know how to explain this, but I know it to be a fact. They have not, however, the same effect in the open air. The power in plants to keep off insects is not, I need not say, an uncommon occurrence; the Walnut tree, for instance, is usually free from their busy hum, and it is this freedom from insects that makes the shade of Walnut trees so agreeable. E. HOBDAY.

Maclean's Advancer Pea.—This spring has been so trying that it will repay every one to note well what has succeeded and what has failed. For instance, in the matter of Peas, I have a sad experience to give of a Pea which has hitherto done good service—I mean Maclean's Advancer. I have always to supply Marrow Peas as soon as possible; therefore, after trying many sorts in previous years by way of experiment, I at last selected Advancer, and until this year it has answered my purpose, for it is early, green in colour, and sweet in flavour. This year I sowed it in February to succeed Dickson's First and Best (at present my earliest Pea), sown early in January, but the snow and frost, and bitter, biting cold of this spring have been too much for it, for scarcely a seed germinated; at least, only here and there one managed to just peep through the ground; thus two quarts of seed, besides the crop which I should have had, have been lost. It therefore occurred to me that Advancer must be too tender to rely upon for a certain crop so early in the season; that it ought not to be considered as either a first or second early Pea, but as a summer Pea. In this, however, I may be wrong, and I hope I am, for Advancer is a great favourite with me; I should therefore be glad to be set right by any of your correspondents, who can from personal experience speak in its favour. I was reporting my loss to a neighbour the other day, who said, "I dare not sow Advancer; I always sow Sutton's Ringleader for my first crop, then Dickson's Favourite, and then the Marrows. Perhaps farther south than where I am (on the line of the Trent) this Pea may succeed.—P.

French Breakfast Radish.—This is not only an excellent variety for forcing and early work generally, but it has the additional recommendation of being handsome in appearance, being bright scarlet tipped with white. In shape it is intermediate between the long Red and the Turnip-rooted varieties. Radishes, like all salad plants, should be grown quickly, so as to be crisp and succulent; and to ensure rapid growth, rich, friable soil and plenty of moisture are necessary. The earliest and latest sowings should be made under glass, and small sowings at frequent intervals should be made in situations to suit the season. The best plan is to sow in drills 9 in. apart; during the hottest periods of the year the Turnip-rooted varieties are the most suitable.—J. G., *Henham*.

Substances from which Crops get their Nitrogen.—Mr. J. B. Lawes, writing to the "American Scientific Farmer," says, "Four substances yielding nitrogen have been made the subject of careful experiment at Rothamsted for thirty or forty years—farmyard manure, rape cape, salts of ammonia, and nitrate of soda. I need hardly say that the nitrogen in these substances exists in many different forms. Of that in farmyard manure, a considerable proportion is very slowly soluble; while that in nitrate of soda is not only perfectly soluble, but is washed very rapidly into the sub-soil and beyond the reach of the roots. In spite of the rapid loss, however, it is by no means certain whether we do not recover as much nitrogen in our crops from the nitrate of soda as from any of the other substances. Owing to the extreme slowness in which farmyard manure decomposes, a very long period must elapse before its influence upon crops ceases, and in the experiments on pastures, the manure which we applied for the last time in 1863 still produces some slight effect. It is a matter of surprise to me that nitrate of soda is so neglected in the States. I feel confident that when used with superphosphate of lime, its action on Indian Corn would be very great. The importance given to potash by your writers, as beyond all things necessary in artificial manures, does not altogether accord with my views. Then one of your writers calls the Sugar Beet a potash plant. The Sugar Beet has been under experiment here for some years, and I have quite recently sent to one of the French agricultural journals a Table of the results for the last five years. The result, however, is this:—A very liberal supply of potash and other alkalies, with superphosphate of lime, produced less than six tons of roots per acre, and 16 per cent. of sugar. The same minerals, with nitric acid in nitrate of soda, or with salts of ammonia, produced twenty to twenty-five tons of Beetroots and two tons of sugar per acre. The Germans are purchasing ammonia very largely in our markets for the Sugar Beet, and sending us potash salts, which they cannot use, and which we do not want."

Mushroom Culture.—Any one in the possession of an outhouse or cellar, and who can command a temperature of from 47° to 50°, can at any time produce a good supply of Mushrooms. The best method is to procure (fresh from the stable) as much short manure as is necessary to make a bed from 14 in. to 18 in. deep, and any size the house can conveniently hold; throw the manure in a heap for a few days until it becomes heated, and the greater part of the moisture is thrown off; then spread it out for a day or two until it is dry and quite cool; after that put it again in a heap, and allow it to remain five or six days; it will then be fit to make a bed, which must not be deeper than the measurements just given. The bed requires to be beaten or trodden so as to make it firm, and thus secure a more lasting heat and prevent the temperature from rising too high at first; as soon as the heat has risen and come down to about 74°, the bed is ready to receive the spawn—half a bushel will spawn a bed 8 ft. to 10 ft. square; it requires to be broken into small pieces, about the size of a large Walnut, and placed in the manure; the bed should then be covered about 2 in. deep with good garden soil, and well beaten down at the time when the spawn is put into the bed. A covering of hay or straw, if put on, and carefully taken off when the Mushrooms appear, will materially hasten their growth. If the above directions be carefully attended to, Mushrooms will begin to appear in about six weeks. After the bed has been spawned, it should on no account be watered unless when very dry; a small quantity of water, the same temperature as that of the bed, only to be given at a time. The walls and floor of the house may be damped in order to maintain a moist temperature.—J. D.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Laxton's Unique Early Dwarf Pea.—I have this year forced this early new Pea in pots, and can highly recommend it for that purpose. Hitherto, my old favourites have been Little Gem and Multum-in-parvo, but I shall now exchange Little Gem for Unique. Multum-in-parvo I had ready to gather in the beginning of May, and Unique a week earlier in the same pit. I mean to try in another year Sutton's Bijou as well as the above varieties, as it is an excellent flavoured and very dwarf Pea. Where a pit can be had with a slight heating power, the growing of these dwarf early Peas in pots furnishes some good dishes before they are ready in the open air.—WILLIAM TILLERY, *Welbeck*.

Early Cabbages.—Pearson's Conqueror is a favourite sort about Nottingham. It is small, compact, early, with thick mid-ribs, sweet, and tender; but this year the Early London has beaten the Conqueror completely in some quarters. Early Rainham, when true, is a good, early, small kind, but out of a packet of Early Rainham seed one is almost sure to get a variety of Cabbages. It is not to be trusted.—P.

THE INDOOR GARDEN.

A NEW EDIBLE PALM.

The "Revue Horticole" lately published an interesting account (with an illustration one-twentieth of its natural size) of the Cocos australis, which has borne fruit in the open air in France for the first time, in the garden of the late M. Bonnet, at Villa Marguerite, situated a few miles from Hyères. The Cocos australis, of which the annexed is an illustration (fig. 1), has been planted for ten years, and at the time of its bearing fruit measured 5 ft. 6 in. in height and nearly 30 ft. in circumference. The leaves, to the number of twenty-eight, measured nearly 5 ft. long, and 2 ft. 9 in. broad, the number of pinnules of each leaf being nearly 100. The fruit, which is shown of its natural size in fig. 2, is in shape something like an Acorn with a pointed top, of a beautiful golden-yellow colour, sometimes tinged or spotted with red when it is ripe, which generally happens about the end of September. The fruit at maturity is soft and pulpy, the flesh yellowish, succulent, and sometimes slightly fibrous. Its flavour is delicious, resembling that of a Pine-apple. It contains a pip (fig. 3) pointed at both ends, about as big as a Barleycorn. The fruit will keep good for several days. The hardiness of the Cocos australis, and the facility with which it has fruited on the shores of the Mediterranean, in the neighbourhood of Hyères, and the excellence of its fruit, seem to indicate that this species is calculated to play an important part as a fruit tree in the southern districts of France. As an ornamental plant it may well displace the Date tree (Phœnix dactylifera), which does not bear eatable fruit in that climate. Its growth, however, it must be observed, is slow, and curiously enough, none of the specimens growing in France show any signs of a stem, the most vigorous showing nothing more than a kind of swelling at the base near the surface of the soil, formed by the accumulation of the stumps of the petioles, the withered fronds of which have been cut off from time to time. The finest specimen of this beautiful Palm with which I am acquainted is in the Jardin des Plantes, and is planted in a bed in the temperate house. It measures over 16 ft. in height, and about the same in diameter. The bole, close to the surface of the ground, is not less than 15½ in. thick. It was grown from seed sent from Paraguay, somewhere about the year 1838. Like the fruit-bearing specimen at the Villa Marguerite, it is devoid of any appearance of stem, and the casual observer would be inclined to believe that the Cocos australis was stemless; but, according to the statement given in Martins and d'Aubigny's "Palmiers du Paraguay et de la Bolivie," it has a tall, straight, columnar stem of equal thickness throughout, and annulose towards the top. Judging from the proportions of the figures given by MM. Martins and d'Aubigny in the work cited, the stem of the full-grown plant appears to be from 19 ft. to 22 ft. in height, and about 1 ft. in diameter. Singularly enough, and contrary to the habit of most stemmed Palms, it will bear fruit before the stem is developed, and while the plant is comparatively young, as in the case of the specimen at the Villa Marguerite, which flowered in 1874, but without fructifying, and this year it has every appearance of bearing fruit again during the coming autumn. In Paraguay the fronds are used for making cordage, blinds, and other useful articles. The pip, which is the seed, is said to yield an oil on being submitted to pressure.

Fig. 3. Fig. 1.—Cocos australis. Fig. 2.

Cape Heaths and other Hard-wooded Plants.—During the summer months and, indeed, throughout the year, no class of plants is more beautiful than these, and not only are their flowers attractive, but the plants themselves are, as a rule, remarkable for their neat shape—trim, without being formal. A Heath or hard-wooded house, too, has other points worthy of consideration, among which is the fact that the labour required to keep it up through the year is less than that needed for a house in which soft-wooded plants are grown. Watering and potting hard-wooded plants may certainly demand more skill and judgment, and of course if we do not buy ready-made specimens of hard-wooded plants it takes years to get a good stock of them together, while in a single season much may be done with soft-wooded plants; but when once a stock of Heaths or of similar plants is obtained, less labour is, as I have said, needed to keep it in good condition than soft-wooded plants. Then as regards individual plants both Heaths and others are very effective when well arranged. In a span-roofed house, say 60 ft. by 20 ft., with a stage around it, and a table in the middle, let the centre row of plants consist of Erica Cavendishi, which, as we all know, is a beautiful and delicate yellow; Aphelexis macrantha rosea, whose flowers, when open in the sun are very beautiful; Acrophyllum venosum, the leaves and blossoms of which are both handsome; Genetyllis Hookeri, an indispensable plant, which flowers more or less throughout the year, and, on that account, well worth cultivating, though not such a fine species as the better known G. tulipifera. Other rows may consist of Eriostemons, which, when of fair size, make good associates for Heaths, requiring only a little regulating once a year, previous to flowering; the blossoms, too, are useful for cutting. Boronias are also good plants to grow along with Heaths, as is also Dracophyllum gracile, the small, white, floral heads of which look well in bouquets, and for the same purpose nothing is more useful than some of the Heaths belonging to the ventricosa class. Cape Heaths of all kinds should, however, be everywhere plentiful, as few plants upon the whole give more general satisfaction.—Robert Mackellar, *Abney Hall, Cheadle.*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Tea Roses for Pot Culture.—What are the best varieties for this purpose—I mean full-petalled Roses, not merely handsome when in the bud state?—W. H. M.—[The following are good kinds: Niphetos, Mme. Margottin, Perle des Jardins, Souvenir d'un Ami, Souvenir d'Elise, Perfection de Monplaisir, Catherine Mermet, Marie Van Houtte, President, Alba rosea, and Anna Olivier.—Geo. Paul.]

The Lilac-flowered Fuchsia.—Referring to Fuchsia syringæflora, the President of the Orleans Horticultural Society writes as follows to the "Revue Horticole":—"When grown in small pots, the effect of Fuchsia syringæflora is indifferent, but, when grown in large pots, or in the open ground, it forms splendid bushes 3 or 4 ft. high, of fine shape, and bearing an abundance of flowers all the summer, and for some time on into the winter. This plant was introduced in 1819, by the late M. Van Houtte, who considered it to be a variety of F. arborescens."

PLATE XXVII.

THE PASSION-FLOWERS.

(WITH A COLOURED FIGURE OF PASSIFLORA INSIGNIS.)

FROM their brilliant colouring and peculiar structure, Passion-flowers appear to have attracted the attention of the earliest travellers and settlers in America, and several of the species were among the first tropical plants cultivated in Europe on account of their beauty alone. The monks of the Roman Catholic Church, we are told, discovering something in the structure of the flower of scripture application, gave the name now generally adopted for them; but Parkinson, writing about 1650, on P. incarnata, waxes exceedingly wroth on this point, and exclaims against the superstition of the people. He figures the species just named in his "Paradisus" (1656), and on the authority of Aiton's "Hortus Kewensis," it was introduced into this country in 1629; but I have not been able to obtain any more exact information on this subject, though from the quotation from Gerard given below it would appear to have been introduced towards the latter end of the previous century. Moreover, it is not my intention to enter into historical details here, because everything of interest, that space will permit, is given under the several species; and as excellent cultural directions have already appeared in THE GARDEN from time to time, it would be superfluous and unduly extend this article, to repeat them here. A few notes from some of the older authors may interest readers who have not access to their writings. Gerard (1597) says of a Passion-flower, probably P. incarnata, "This growes wilde in most of the hot countries of America, from whence it hath been brought into our English gardens, where it growes very well, but only flowers in some few places, and in hot and seasonable years. It is in good plenty, growing with Mistress Tuggy at Westminster, where I have some years seen it bear a great many flowers." Miller enumerates and pretty fully describes nine species in the first edition (1731) of his Dictionary, and Linnæus in "Species Plantarum," 1764, has twenty-six species. In the seventh edition of "Miller's Dictionary," published forty years after the first, nineteen species are described, and in Dr. Masters's list in the "Journal of the Royal Horticultural Society of London," 1874, upwards of one hundred species and distinct varieties are enumerated as being, or having been, in cultivation. The handsome forms of this genus need therefore no recommendation. Indeed, they present such a perplexing richness in variety as to render it difficult to make a choice. Many of the less ornamental species are not included here, but a few that would now be regarded as scarcely worth growing, except in a collection, are briefly described on account of their historical interest. Some botanists regard Tacsonia as a distinct genus from Passiflora, differing mainly in its longer calyx-tube, but some of the true Passifloras, as P. quadriglandulosa and P. Buchanani, have long tubes, whilst on the other hand, some of the Tacsonias have short tubes; otherwise the order of arrangement followed here is the same as that adopted by Dr. Masters in the "Flora Brasiliensis." Technicalities have been avoided as much as possible in the descriptions, which are mainly confined to the more prominent distinguishing characteristics of each species. Only the portion of the coronet visible above the mouth of the tube is mentioned; all the appendages within the tube being disregarded. But I may observe here that some of the latter are very singular, and deserving of careful study in reference to their part in the economy of the life of the plant. Sometimes there are as many as eight series of organs belonging to the coronet or coronets. Nearly two hundred species, or distinct wild forms, are known. All of the sub-genus Tacsonia are American, and chiefly grow at a great elevation in the temperate region of the Andes; and more than nine-tenths of the species of the sub-genus Eupassiflora are American, from Uruguay in the south to Pennsylvania in the north, but finding their greatest concentration in the Tropics. The few remaining species are natives of Asia and Australasia, none occurring in Africa. Without giving a general selection here, it may be stated the varieties of P. cœrulea are the most ornamental of hardy Passion-flowers, and the following are some of the best hybrid varieties cultivated in our gardens:—P. albo-nigra (Regel, Gartenflora, 1852, t. 8), a cross between P. alata and P. Raddiana; P. alato-cœrulea (Bot. Reg. t. 848); P. cœrulea-racemosa (Loddiges' Bot. Cab. t. 573); Impératrice Eugénie (Illustration Horticole, 1858, t. 175); and P. exoniensis (Tacsonia), a very handsome hybrid between P. mollissima and P. Van Volxemi.

Sub-genus I.—Eupassiflora.

Flowers more or less bell-shaped, with a tube usually much shorter than the sepals and petals (except P. trinervia, No. 31, &c.); coronet-threads usually at least half as long as the petals.

Section I.—Astrophea.—Trees or erect shrubs usually without tendrils.

1. **Tree Passion-flower** (P. arborea). [Synonym—P. glauca, Humboldt Pl. Æquinoct., t. 22.]—A very distinct species from all others in cultivation in being a tall tree with large, broad leaves. Humboldt describes it as a lofty tree of the habit of Magnolia tripetala with alternate, spreading branches, large, thin, glabrous, undivided leaves, linear stipules, no tendrils, and cymose, sweet-scented, white flowers. The leaves vary from lanceolate to oval, oblong, and obovate; and Mr. Spruce states on a label in Kew Herbarium that they are sometimes 2 ft. long. The flowers are not very showy, about 2 in. in diameter at the outside, with greenish-white sepals, white petals, a pale yellow coronet, and deeper yellow anthers. They are borne in stalked cymes, from four to six or more together. Spruce describes it as a very handsome shrub with a simple stem 8 ft. to 14 ft. high, bearing leaves and flowers at the summit. This was at an altitude of between 2000 ft. and 3000 ft. A native of Peru and New Grenada, in the plains and at slight elevations, and consequently it requires stove treatment. It was introduced into this country in 1779 by Messrs. Lee and Kennedy, but there is no portrait of it in any of the magazines. There are several other species of this sub-genus, but none of them appear to have been in cultivation, and they are not remarkable for their ornamental character in a genus so rich in handsome species.

Section II.—Plecostemma.—Climbing or trailing herbs or shrubs, usually furnished with tendrils; bracts small or deeply divided; flower-tube short.

† *Flowers without either petals or bracts.*

2. **Slender Passion-flower** (P. gracilis; Bot. Reg. t. 870.)—An annual species of small dimensions, glabrous in all its parts, or slightly hairy when quite young. Stem much branched, slender, terete. Leaves on slender petioles 1 in. to 2 in. long; blade membranous, slightly three-lobed, cordate at the base, 2 in. to 3 in. broad; lobes rounded, the central one often notched; petiole often furnished with two-stalked glands. Flowers solitary and axillary, borne on slender peduncles shorter than the leaves, from 1 in. to 1½ in. in diameter, greenish-white tinged with blue; stigmas turned downwards. Although not very showy this is an attractive little stove climber, producing a profusion of flowers and ripening seed freely. The fruit is deep red, oblong and about an inch in length. It is a native of Venezuela, and was first grown in this country by Mr. Colville, about the year 1823.

3. **Bat-leaved Passion-flower** (P. coriacea). [Synonyms—P. difformis and P. biformis].—This species is remarkable for the shape of its leaves, which resemble a bat with outspread wings. They are coriaceous in texture, and from 3 in. to 9 in. broad at right angles to the petiole, which is glandular and attached a little within the margin of the blade. The flowers are small, of a greenish colour, and more curious than beautiful. A native of the West Indies and tropical America, occasionally cultivated on account of the singularity of its foliage.

4. **Cork-barked Passion-flower** (P. suberosa).—This species, as limited by Dr. Masters, includes a wide range of forms, differing more in the shape and size of the leaves than in any other particulars, though the flowers also vary considerably in size, taking the extreme varieties. As, however, none of them possess any ornamental merits, it is undesirable to describe them in detail here. Briefly they are—(1) P. minima (Jacquin, Hort. Vindob., t. 20), with greenish flowers, little more than half-an-inch in diameter, and three-lobed leaves, the lateral lobes very short; it was one of the first Passion-flowers grown in this country, having been introduced by the Earl of Portland in 1690: (2) P. hirsuta, a hairy form introduced by Mr. Gilbert Alexander in 1778: (3) P. angustifolia (Jacquin, Hort. Schœnb., t. 181), in cultivation in this country in 1773: (4) P. pallida (Bot. Reg., t. 660), with small yellowish-green flowers and ovate, entire leaves; introduced before 1822 by Colville, of the King's Road Nurseries: (5) P. hederacea, introduced in 1778; this species is

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PASSIFLORA (TACSONIA) INSIGNIS.

widely dispersed in Tropical and Sub-tropical America, and includes the P. Warei of Nuttall. It has become naturalised in India and other countries.

†† *Flowers with petals. Involucral bracts bipinnately divided into slender segments.*

5. Latticed Passion-flower (P. clathrata; Fl. Brasiliensis, t. 110).—An erect shrub clothed with long yellow hairs. Tendrils absent. Leaves ovate, entire, on short petioles. Flowers purple, less than 2 in. in diameter, borne on stalks about an inch in length, and subtended by a finely-divided lattice-like involucre in the way of P. fœtida. A native of Brazil, not in cultivation, and merely mentioned here on account of its distinct habit.

6. Fœtid Passion-flower (P. fœtida).—Taken in its widest sense, this elegant, though not very showy, climbing species includes several distinct forms from a horticultural point of view; all of them possessing the characteristic of an involucre as large as the flower, or even exceeding it, and cut up into numerous thread-like segments; and the leaves, when crushed, exhale an unpleasant odour. Miller describes two varieties as being in cultivation in 1731, under the names *Granadilla flore albo, fructus reticulato*; and *G. fœtida, folio tricuspide villoso flore purpureo variegato*. The latter, he says, was commonly cultivated as a stove annual under the name of Love-in-a-mist, a name given to it by the inhabitants of Barbadoes; perhaps because there is a general resemblance between this and the European Nigella damascena. Among the varieties in cultivation, or having been in cultivation, of which there are figures, the following may be mentioned in the order in which they were introduced:—P. ciliata (Bot. Mag. t. 288) was introduced by a Mr. Norman from the West Indies in 1783. It has deeply three-lobed leaves, rose-pink-faced petals, violet-tipped coronet-threads and yellow anthers and filaments, the latter spotted with red, according to Curtis. This pretty variety was common in London gardens in 1794. The second form is called P. gossypifolia (Bot. Mag. t. 2619). As the name indicates it has three-lobed, soft downy leaves, similar to those of the Cotton Plant. The flowers are white, or with a faint tinge of blue, like milk and water, and the anthers are yellow. The figure in the "Botanical Magazine" represents this as having an oblong, green fruit, enveloped in the persistent much-divided involucre. It was introduced about the year 1823. P. nigelliflora (Bot. Mag. t. 3635) is a third variety, having five-lobed, deeply and irregularly toothed leaves, cordate at the base, and a glandular very highly developed involucre. The flowers are white or greenish-white, with the exception of the purple-tipped coronet-threads. This was discovered in 1835 by Mr. Tweedie, on his way from Mendoza to Tucuman, and it flowered in the Glasgow Garden in 1838. The flowers of all the varieties are very ephemeral, often falling before mid-day, but a succession is kept up for a long period.

††† *Flowers with petals; bracts, small, free.*

7. Six-flowered Passion-flower (P. sexflora). [Synonym—P. floribunda, Flore des Serres, iv., p. 335].—A perennial climber with pubescent, membranous, broad, three-lobed leaves, cordate at base; lateral lobes directed outwards, 3 in. to 5 in. from tip to tip, rather longer than the intermediate one, the principal nerve of all of them running out into a small bristle. Flowers abundant, yellowish-white, less than 1 in. in diameter, and usually not exceeding half an inch, clustered on short stalks in the axils of the leaves. Fruit about the size of a large Pea. This not very showy species is a native of the West Indies and Tropical America, and was first cultivated in this country in 1826. It is remarkable in the shape of its leaves.

8. Large-glanded Passion-flower (P. auriculata; P. appendiculata).—A perennial climber with somewhat coriaceous, when mature, ovate-cordate, or oblong, acute leaves, glabrous, usually with two very small lateral lobes, or indications of lobes above the middle, and a few large, circular, immersed glands on the under surface; petiole usually less than an inch long, furnished with two rather large, ear-like glands below the middle. Flowers about an inch in diameter, greenish or yellowish white with violet-tipped coronet-threads, borne in pairs or solitary in the axils of the leaves on stalks less than an inch in length. A native of the West Indies and Tropical America, introduced in 1820. The glandular appendages of the petioles are unusually large in this species.

9. Half-leaved Passion-flower (P. truncata; Regel, Gartenflora, viii. t. 276).—A slightly hairy, perennial climber with angular branches, half circular leaves, and small white-green flowers, having a yellow coronet. This species has a very singular leaf, which is usually so decidedly truncate at the apex as to present the appearance of having been cut asunder; sometimes, however, it is very obscurely three-lobed. Introduced from Brazil by Riedel, and cultivated in the Botanic Garden at St. Petersburgh in 1859.

10. Tuberous Passion-flower (P. tuberosa; Bot. Reg. t. 432). [Synonym—P. punctata, Bot. Cab. 191, not of others].—A tuberous-rooted species with glabrous, angular stems, and glabrous leaves, 4 in. to 6 in. long, furnished with immersed, circular glands beneath, divided about two-thirds of the way down into two equal, nearly erect or slightly spreading lobes; lobes oblong, obtuse or lanceolate and acute; sinus between the lobes narrow or open, usually approaching in shape the outline of the lobes. Flowers usually two together on stalks about an inch long, about 2 in. in diameter, greenish-white, the coronet variegated with white and purple. A native of the West Indies and tropical America, introduced in 1810. It is not of a highly ornamental character.

11. Rounded-leaved Passion-flower (P. rotundifolia).—A hairy climber with slightly angular stems. Leaves 2 in. to 3 in. broad and long, rounded at the base nearly truncate at the apex or terminating in three very short, broad, rounded lobes, eventually glabrous above, pubescent beneath; petioles usually less than an inch long in dried specimens. Flowers very small, yellowish-green. Fruit about the size of a large Pea. This is one of the least ornamental species in cultivation. It is a native of Brazil and the West Indies, and was cultivated as long ago as 1779, by J. Blackburne, Esq., on the authority of Aiton's "Hortus Kewensis."

12. Silky-flowered Passion-flower (P. holosericea; Bot. Mag., t. 2015; Bot. Reg., t. 59).—A hairy climber with slender terete stems, and nearly oval, three-lobed, soft hairy leaves, 3 in. to 4 in. long; lobes rounded, the principal nerve running out in a short bristle, lateral ones much shorter than the central, or sometimes almost obsolete; blade sometimes auricled at the base; petiole an inch or more in length furnished with two large glands above the middle. Flowers hairy outside, borne in shortly pedunculate cymes of three to six, about 1½ in. in diameter; sepals and petals similar, rounded, white or greenish-white; coronet-threads about two-thirds as long, bright yellow at the tips, reddish purple at the base. This, though not a splendid species, is very pretty and succeeds in a greenhouse. It is a native of Mexico, and was introduced by Dr. W. Houston before 1733. It is rarely seen in gardens now that so many much handsomer species are known.

13. Three-banded Passion-flower (P. trifasciata; Illus. Hort., t. 544).—This species was introduced by Baraquin in 1867, and is pretty well known on account of the ornamental character of its coloured three-lobed leaves, each lobe being traversed by a rich red feather or band. The flowers are small and comparatively inconspicuous, said to be a native of North Brazil, and thrives well in a warm greenhouse.

14. Lesser Bat-leaved Passion-flower (P. Vespertilio).—This singular species approaches P. coriacea in the shape of its leaves, which present some resemblance to a bat with outspread wings. In some of the varieties they are perhaps more like a butterfly. The typical form has nearly triangular, slightly coriaceous leaves, rounded at the base, where there are two large, dark-coloured, eye-like, immersed glands on the upper surface, the apex of the leaf forming the base of the triangle, with very acute angles. Sometimes there is a very small, tail-like, central lobe produced, but, as already observed, the outline of the leaf is subject to considerable variation. The small, greenish flowers of this species expand late in the evening and close early, not to re-open, on the following morning. This remarkable species deserves a place in the hot-houses of lovers of strange forms. It is a native of the West Indies and Tropical America, and appears to have been first cultivated in this country by Dr. J. Sherard in his famous garden at Eltham. He obtained it from Holland, and there is a good figure of it in Dillenius's magnificent work "Hortus Elthamensis," published in 1732, where it bears the name of Granadilla bicornis.

15. Red-tinged Passion-flower (P. rubra; Bot. Reg. t. 95).—This species also has very variable leaves, something after the plan of those of the last, but in this they are clothed with soft hairs, when young at least on both surfaces; they are distinctly cordate at the base, and the lateral lobes take a more upward direction. The central lobe is much smaller than the lateral, and often quite obsolete, with the exception of the bristle point terminating the midrib. The figure quoted above represents the stems, petioles, tendrils, and nerves of the leaf on the under surface of a reddish tinge. The flowers are about 1½ in. in diameter, on a stalk from 1 in. to 2 in. long; sepals and petals similar, greenish-white, slightly tinged with red; coronet-threads about two-thirds the length of the petals, red, deepening to crimson in the centre; style branches red, anthers and stigmas yellow. This species is a native of the West Indies, and was in cultivation in this country previous to 1731. It is one of the species described by Miller in the first edition of his "Dictionary."

16. **Graham's Passion-flower** (P. capsularis; Bot. Mag. t. 2868).—A glabrous climber, or only hairy on the quite young parts. Leaves presenting similar variations in shape to the last from a truncate or obscurely three-lobed apex to deeply two-lobed, as in the figure quoted. Flowers inconspicuous. This species comes near the last, but differs in having an oblong fruit traversed longitudinally by six sharp ridges. It was introduced from the West Indies, in 1820, by Dr. Graham, and possesses little beauty to recommend it to the cultivator.

17. **Marbled Passion-flower** (P. organensis).—This is closely allied to the two last, and is only mentioned here on account of the variety P. marmorata, which has the leaves prettily mottled with white and yellow. It is a native of Brazil, and is described as a pretty stove climber. Introduced a few years ago by Mr. Bowman, and sent out by Messrs. Veitch.

18. **Crescent-leaved Passion-flower** (P. lunata; Bot. Mag. t. 2354; Bot. Reg. t. 577).—A tall, evergreen, climbing species. Leaves cordate at the base with two spreading lobes; lobes sometimes narrow and forming a crescent-shaped leaf, sometimes broader than long; petioles short, destitute of glands. Flowers little more than an inch in diameter; petals and sepals obovate, white on the face; coronet-threads yellow at the tips, green at the base. As represented in the "Botanical Register," this is a neat and rather pretty species. It inhabits the West Indies, and was sent to the Chelsea Botanic Garden previous to 1733, by Dr. William Houston.

19. **Medusa Passion-flower** (P. Jorullensis). [Synonym—P. Medusæ, Bot. Mag. t.4752].—A climber, with somewhat crescent-shaped, glabrous, three-nerved leaves, beset with small, eye-like, immersed glands; nerves terminating in a short bristle; petiole from ½ in. to 1 in. long, without glands. Flowers less than 2 in. in diameter, borne on slender peduncles, 1½ in. to 2 in. long; sepals narrow-oblong, yellow on the face; petals very minute; coronet-threads red, nearly as long as the sepals. This is an extremely pretty species, supposed to be a native of Mexico. It was introduced into Belgian gardens about 1848.

20. **Red-leaved Passion-flower** (P. erythrophylla).—A slender, glabrous climber with angular branches, small, half-circular leaves, truncate or obscurely three-lobed at the apex, and very small flowers and minute petals. I have only seen a small dried specimen of this species, judging from which the leaves must be of a bright red colour and the plant possibly a very ornamental one. A native of New Grenada.

21. **Thread-stalked Passion-flower** (P. filipes).—An elegant, exceedingly slender climber, glabrous in all its parts. Leaves 1 in. to 2 in. in diameter, borne on very slender petioles, nearly circular in outline, with three short, broad, rounded lobes, the principal nerve of each terminating in a minute bristle-point. Flowers very small, greenish-white, borne on very slender stalks, 1 in. to 2 in. in length. This Mexican species is not in cultivation, but it deserves mentioning here on account of its great elegance. It appears, from, the dried specimens, to be quite a miniature plant.

22. **Hooker's Passion-flower** (P. penduliflora; Bot. Mag. t. 4565).—This is a very distinct, climbing, evergreen shrub, with glabrous, coriaceous, half circular, or oblong leaves, with a truncate or obscurely three-lobed apex, and a wedge-shaped base. The pendulous flowers are greenish-yellow with an orange-red coronet, 1½ in. to 2 in. in diameter, borne on rather stout peduncles, 2 in. to 3 in. long. A very striking characteristic of this species is the enlarged ten-lobed or gibbous calyx-tube. A native of the West Indies, introduced about 1850. In his description of the plant under the plate quoted, the late Sir W. Hooker observes:—"Though destitute of the varied colouring of many of the species of the genus, there is a grace and an elegance in the plant that render it an object well worthy of cultivation."

23. **Small Yellow Passion-flower** (P. lutea, Bot. Reg. t. 79).—This species is a native of the Southern States of North America, and is mentioned here not so much on account of its beauty, though it is an elegant, slender climber, as on account of its being one of the first cultivated in this country. It has broadly cordate leaves 2 in. to 4 in. broad with three broad, rounded lobes, and borne on slender petioles. The greenish-yellow flowers are scarcely more than half-an-inch in diameter, and are borne on slender peduncles nearly as long as the leaves. Miller (1731) says of this species that "it is very hardy, enduring our severest cold in the open ground, dying to the ground every year, and rising again the succeeding spring; that it increases very fast by its spreading roots; but it seldom produces its flowers, and when it doth, they are so small and ill-coloured, that it scarce deserves a place in the garden." P. sicyoides (odora) and P. bryonoides are inconspicuous species of this group, which are, or have been, in cultivation. P. Maximiliana (Vespertilio, Bot. Reg., t. 597, not of Linnæus) with leaves the shape of a strong bow, resembling some of the forms of the true P. Vespertilio, has been grown under the name of P. discolor. P. punctata and P. Swartzi are other species formerly in cultivation, but they do not merit full description in this place.

24 **Herbert's Passion-flower** (P. Herbertiana; Bot. Reg. t. 737, Disemma Herbertiana).—A tall, more or less hairy climber, with broad, palmately-lobed leaves, truncate or slightly cordate at the base. Leaves 3 in. or more in length, with three broad, triangular sharp-pointed lobes, and borne on long stalks, furnished with two glands near the top. Flowers green and white, or yellow, solitary or two or three together, borne on pedicels much shorter than the leaves. A greenhouse species, native of Australia, in Queensland and New South Wales; not so ornamental as many others, and only recommended to amateurs forming collections in the south of Europe and similar climates. It was introduced into this country in 1821.

25. **Sir Joseph Banks' Passion-flower** (P. Banksi).—This is very near the last, differing in being glabrous, in the lobes of the leaves usually obtuse, and in the structure of the coronet. It is also very near P. aurantia. A native of Australia. I find no date of the introduction of this species, nor have I ever seen it growing; but it was in cultivation in this country in 1867.

26. **Dr. Lindley's Passion-flower** (P. cinnabarina; Gard. Chron. 1855, with cut).—This species has palmately, from three to five lobed, thin leaves, on short petioles destitute of glands. The coronet in this, as in other Australian species, is infolded towards the column. Dr. Lindley describes it as a graceful, bright green climber, with thin, half-transparent leaves. Flowers about 2½ in. in diameter, dull red, except the coronet, which consists of yellow threads. The fruit is like a yellow Plum, having a distinct perfume similar to that of a Melon, giving the plant a very beautiful appearance. It was discovered by Sir Thomas Mitchell, who sent seeds of it to the Royal Horticultural Society's Garden, whence it was distributed some years ago.

27. **South Sea Passion-flower** (P. aurantia; Disemma aurantia, Labillardière Sertum Austro-Caledonicum, t. 79).—A glabrous climber with furrowed or angular branches, very broadly three-lobed leaves, 2 in. to 3 in. broad, rounded, truncate, or slightly cordate at the base; lobes rounded, the central ones rather longer than the others; petioles half-an-inch to 1½ in. long, slender, furnished with two glands above the middle. Flowers about 2½ in. in diameter, on axillary peduncles, 1 in. to 2 in. long; sepals much longer than the petals, furnished with a short awn or spur just below the tip, green outside, purplish-red within, as well as the oblong petals. Coronet consisting of numerous, linear, spreading threads, and a central tube enclosing the lower part of the staminal column. Fruit oblong, nearly 2 in. in diameter through the broadest section. This species was introduced by Messrs. Lee and Kennedy in 1792. It is a native of Norfolk Island, New Caledonia, and other islands of the South Sea, and not so ornamental as many other greenhouse species.

28. **Maiden-hair Passion-flower** (P. glabra; P. adiantifolia, Bot. Reg., t. 233).—A similar plant to the last, differing, however, in having no glands on the petioles, in the lateral lobes of the leaves being notched, and in the shorter coronet. The flowers vary from a dirty yellowish-white to orange and brick-red, as also, it is stated in the "Botanical Register," do those of P. aurantia. A native of Norfolk Island, introduced by Messrs. Kennedy and Lee in 1792, but it appears to have given place in most gardens to the more showy species and hybrids.

Section III.—Murucu'a.—Bracts small, separate. Flowers coloured on the outside. Coronet thin, flat not folded, entire or fringed at the top.

29. **Bladder Passion-flower** (P. Murucuia, Bot. Reg., t. 574).—A glabrous climber with angular stems and transversely two-lobed, crescent-shaped or half-circular leaves, 1½ in. to 2 in. broad, glandular beneath; lobes slightly notched at the apex; petiole destitute of glands, less than half an inch long. Flowers of a rich, though dull, carmine-red, about 2½ in. in diameter, borne on stalks usually exceeding an inch in length; sepals and petals similar, linear-lanceolate, turned back in the fully expanded flowers, the latter shorter and narrower than the sepals. Coronet of the same colour as the sepals and petals, erect, bell-shaped, about a third as long as the very tall column. The tube of the flower is spherically expanded immediately below the sepals and divided into ten small compartments, represented outwardly by as many inflations. A very showy and distinct species, growing wild in the West Indies. According to the "Hortus Kewensis" this species was cultivated by Miller in 1739, but he describes the leaves as stem-clasping—the character of the next species. The figure quoted above was published in 1821,

and in the accompanying text it is stated that it was taken from a plant in the hot-house of Messrs. Colville, King's Road, Chelsea, which was raised from seed received by Mr. Anderson, the superintendent of the Chelsea Physic Garden, from St. Domingo; and the writer gives it as his opinion that this was the first time the species had flowered in England.

30. Connate-leaved Passion-flower (P. perfoliata; Bot. Reg. t. 78).—This is similar in its floral structure to the last, but quite distinct from it. The young branches are less angular and quite hairy, and the transversely two-lobed leaves are nearly sessile, and each lobe has an ear at the base embracing the stem, lobes spreading 2 in. to 4 in. from tip to tip, oblong, obtuse, with a minute bristle-point; sometimes an intermediate, very short one is developed. Flowers purple, rather smaller than in the last; sepals linear, much narrower and shorter than the lanceolate petals; tube traversed longitudinally by purple ribs; coronet short, green with a yellow rim. A variety figured in Andrew's "Botanical Repository" t. 547, has rosy red flowers. The fruit is bluish-red and about the size of a Cherry. Also a native of the West Indies, introduced into this country previous to 1739. A very free-flowering desirable species for a warm greenhouse.

31. Oblong-leaved Passion-flower (P. oblongata).—A woody climber with oblong, glabrous, coriaceous, strongly three-nerved leaves glossy on the upper surface, 4 in. to 6 in. long by 2 in. to 3 in. broad, rounded at the base, truncate, crescent-shaped or three-lobed at the apex; petiole 1 in. to 2 in. long; nerves running out into short bristles. Flowers red, bell-shaped, borne in leafless racemes on the old wood. This was in cultivation in 1816, according to the "Hortus Kewensis," but I find no figure of it in the magazines.

32. Catesby's Passion-flower (P. cuprea; Jacquin Icon. Pl. Rar. t. 606).—A glabrous climber with slightly angular branches, oblong-oval, entire, obtuse, sub-coriaceous, glandular leaves, and rosy red flowers, about 2 in. in diameter. Coronet cup-shaped, segments united at the base, black with orange tips in the figure quoted. Native of West Indies, introduced by Mr. Mark Catesby in 1724, and cultivated by Dr. Sherard at Eltham in 1732. There is a good figure of it in the "Hortus Elthamensis."

33. Long-tubed Passion-flower (P. trinervia; Tacsonia trinervia).—A woody climber, young parts hairy, leaves leathery, three-nerved, acuminate or more or less three-lobed at the apex. This species is remarkable for its long tubular flowers, 4 in. to 6 in. long, similar to those of the true Tacsonias, but without the large leafy bracts at the base. The flowers are of a rosy red, hairy on the outside while young, but eventually glabrous, and borne on slender stalks 4 in. to 6 in. or more in length. Coronet small within the tube. This remarkable species is a native of New Grenada, and has not yet been introduced.

34. Wallis's Passion-flower (P. sanguinolenta).—A hairy climber with angular branches, half-circular, two-lobed leaves, with the apex hollowed out and sometimes with the rudiment of a third lobe, about 2 in. to 3 in. in diameter, and borne on short, slender stalks. Flowers bell-shaped, rose-pink, hairy on the outside, and the tube inflated at the base, destitute of bracts. Coronet consisting of numerous short free threads, red with white tips. This species was introduced by Mr. Wallis a few years ago, but it does not appear to have got into general cultivation.

Section IV.—Granadilla.—Climbing herbs or shrubs with tendrils, large leafy or coloured involucral bracts, surrounding the bell-shaped flower-tube, and a conspicuous filamentous coronet.

† *Bracts united at the base.*

35. Apple-fruited Passion-flower (P. maliformis; Bot. Reg., t. 94).—A glabrous or slightly pubescent climber, with short branches and large ovate or ovate-cordate, entire, abruptly-pointed leaves, 3 in. to 6 in. long, on glandular petioles, 1 in. to 2 in. long; stipules small linear. Flowers fragrant, solitary, axillary, on stalks 2 in. to 3 in. or more in length, subtended by very large red-veined, green bracts, exceeding the petals and persistent around the fruit, 2½ in. to 3 in. in diameter; sepals and petals yellowish-white, prettily spotted with red, ultimately turned back, the latter much smaller than the former. Coronet-threads or segments linear, equalling the sepals in length, beautifully variegated red and white with blue tips. Anthers yellow. Fruit oblong, yellow, about 1½ in. to 2 in. diameter, edible in its native country, the West Indies. A handsome species, cultivated in 1731 by Philip Miller. Judging from the dried specimens the involucral bracts are sometimes white and sometimes pink.

36. Mottled Passion-flower (P. ligularis); (Bot. Mag., t. 2967, P. Lowei Gartenflora, 1852, t. 9).—Near the last, with rather larger and thinner, rich dark green, distinctly cordate leaves, on longer petioles, which are furnished with several stalked glands and large, leafy stipules. The involucral bracts are rather smaller than in the preceding species, but they are not so distinctly toothed as represented in the "Botanical Magazine," and the larger sepals and petals are of a yellowish-white on the face. The very numerous coronet-threads equal the sepals, and are mottled red and white with blue tips. A native of Peru and New Grenada, cultivated in this country in 1819.

37. Large-bracted Passion-flower (P. triloba).—I have seen only dried specimens of this species, which is remarkable for its large, oval, green, involucral bracts, often exceeding 2 in. in length, and much larger than the petals. The whole plant has a glaucous hue, and the deeply cordate leaves are undivided or (the lower ones) deeply three-lobed, the margin finely toothed, and they are borne on petioles several inches in length. Sprnce describes the flower as of a violet colour and fragrant. The rather broad coronet-bands are zoned or banded, but the colours cannot be determined from dried specimens. This is in the list of species cultivated at St. Petersburgh.

38. Palmate-leaved Passion-flower (P. serrata).—The last of this section, easily distinguished by its long-stalked membranous leaves, 6 in. to 9 in. in diameter, and palmately divided two-thirds of the way down into five to seven obovate, acuminate, finely-toothed lobes. The petioles are furnished with stalked glands, and the involucral bracts are coloured. It was introduced into this country in 1800, by Sir Joseph Banks, but I have seen no living specimens.

†† *Bracts free to the base.*

39. Wing-stemmed Passion-flower (P. quadrangularis; Bot. Reg., t. 14; Bot. Mag., t. 2041).—A lofty, glabrous climber, with thick, square, distinctly four-winged stems, and large ovate-cordate, or nearly rotundate, acuminate, one-nerved leaves, 4 in. to 6 in. or more long, borne on stout six-glandular petioles, secondary nerves prominent, diverging from the mid-rib; stipules ovate-lanceolate, an inch or more in length; tendrils very stout and strong. Flowers very showy, about 4 in. in diameter; sepals and petals bright rosy-pink and white on the face; coronet-threads exceeding the petals, beautifully marked with alternate crimson-purple and white bands, and tipped with blue and white; stamens yellow, spotted with red. The tube of the flower is bell-shaped, and very fleshy, a character common to several of the immediately following species. This is undoubtedly one of the handsomest of the Passion-flowers, but from its large dimensions it is only suitable for a spacious house. The leaves sometimes attain a foot in length, and the flowers much larger than they are here described. The yellowish-green fruit is edible, growing to the size and shape of a swan's egg. It is one of the Granadillas of Tropical America, where it is generally cultivated. It is said to grow truly wild in Nicaragua, and was in cultivation in this country upwards of a century ago.

40. Malcolm's Passion-flower (P. alata; Bot. Mag. t. 66).—This is near the last, differing in the stems being only narrowly winged, in having usually four glands on the petioles, and in the secondary nerves being fewer, and much wider apart, and curved, closely corresponding to the outline of the leaf, instead of being given off at nearly right angles, in the relatively small stipules and pear-shaped fruit. It perhaps even surpasses P. quadrangularis in the brilliancy and fragrance of its flowers. The plant, figured in the "Botanical Magazine," 1788, has vermilion-red petals, and lilac and white banded coronet-segments, crimson at the base. This was introduced from the West Indies in 1772 by Mr. W. Malcolm, who had a garden at Kennington. P. phœnicea (Bot. Reg. t. 1603), Dr. Masters regards as a variety. In this the face of the sepals and petals is a rich deep scarlet; the sepals green at the back, and furnished with a short, curved spur, just below the tip; and the petals are purplish-red at the back, traversed by a central longitudinal white line. The coronet segments are erect, forming a cylinder, white with crimson bands on the lower half and deep violet in the upper half; and the anthers are yellow. The petioles are represented as bearing two yellow glands near the base of the blade.

41. Large-fruited Passion-flower (P. macrocarpa).—As a species this comes very near P. quadrangularis, and in the young state it is almost impossible to distinguish them. Dr. Masters describes it as having more rounded, smaller leaves in the adult state, and larger stipules, larger, more rounded, serrated bracts, a shorter, shallower calyx-tube, and violet (not pink) petals. Further it has a very much larger fruit, equalling a small Vegetable Marrow, and sometimes attaining a weight of 8 lbs. It is oblong, depressed at both ends, and longitudinally furrowed. This plant is extensively cultivated in Peru and other parts of Tropical America for its fruit, and is possibly nothing more than an improved cultivated variety of P. quadrangularis.

Belonging to allied groups are:—P. riparia, with leathery, oblong-lanceolate leaves and clustered flowers having white petals and a purple and white banded coronet; P. Miersi, with small ovate-acute leaves on very slender petioles, and cartilaginous on the margin and subtended by ear-shaped stipules; P. glandulosa, with coriaceous, oblong-lanceolate, entire leaves, 4 in. to 6 in. long, and remarkable for the metallic lustre of their upper surface and their closely reticulated nervation, large and showy flowers, and glandular bracts; and P. colorata, with entire, coriaceous, reticulated, glossy, ovate-oblong, acute leaves, about 2 in. to 3 in. long, comparatively small flowers and purple bracts. None of these are in cultivation, but they are all very distinct, and deserve a place in a collection.

42. Lovely Passion-flower (P. amabilis; Bot. Mag., t. 4406).—A very attractive, slender-growing species with ovate, acute, entire, membranous, glabrous leaves, 3 in. to 5 in. long, and borne on glandular petioles, the latter less than an inch long on the flowering branches; stipules ovate-lanceolate, acuminate, shorter than the petioles. Flowers solitary, axillary, about 3 in. in diameter, borne on a peduncle 1 in. to 2 in. long; sepals and petals similar, crimson within; coronet white, outer-threads about two-thirds the length of the petals. A native of Brazil introduced it into this country through Belgian gardens previous to 1848.

43. Laurel-leaved Passion-flower (P. laurifolia; Bot. Reg., t. 13.)—A shrubby, glabrous climber, with coriaceous, shining, reticulated leaves, variable in outline, but resembling in shape and size those of the Portugal Laurel. Flowers fragrant, about 3 in. in diameter, solitary on short peduncles, subtended by large orbicular bracts, which are glandular on the margin; sepals and petals similar, greenish-white, finely spotted with red, reflexed; coronet-threads banded with violet, red, and white. Fruit yellow, about the size of a Lemon, edible. This species is a native of the West Indies, and was one of the first cultivated in this country, having been introduced in 1690 by the Earl of Portland. It is of a more woody nature than most Passion-flowers, and its odoriferous flowers are extremely beautiful. P. nitida is handsome, closely allied to a Brazilian species not in cultivation.

44. Houston's Passion-flower (P. serratifolia; Bot. Mag., t. 651).—A slender climber, with terete, pubescent stems, subcoriaceous, oval-oblong, finely-toothed leaves 3 in. to 4 in. long, borne on short petioles furnished with several glands. Flowers on peduncles about as long on the leaves; bracts lanceolate, entire, shorter than the sepals and petals, which are of a greenish-white. Coronet-threads spreading to as much as 3 in. in diameter, and exceeding the petals, mottled red and purplish-brown in the lower half, blue and very slender in the upper half. This pretty species was first raised in the Chelsea Botanical Garden, in 1731, from seeds sent home by Dr. W. Houston.

45. Brilliant Passion-flower (P. coccinea; P. fulgens, Belg. Hort., xvi., t. 13).—A shrubby climber with cordate-ovate or oblong, irregularly-toothed leaves, 3 in. to 5 in. long by 1½ in. to 3 in. broad; glabrous above, and clothed with a very short, soft down beneath. Flowers solitary and axillary, on peduncles 2 in. to 4 in. long; bracts 1 in. to 1½ in. long, lanceolate-ovate, toothed; sepals and petals similar, nearly 2 in. long, represented as reflexed on the peduncle in the figure quoted, of a dazzling scarlet; outer coronet-threads about half as long as the petals, erect and curved at the tips, variegated white and scarlet; anthers green, faintly spotted with red; styles scarlet. There are two varieties of this species—that figured in the "Belgique Horticole" is described as perfectly glabrous, but most of the dried specimens I have seen have a velvety down on the under surface of the leaves, and the flowers are even larger than described above. A native of Tropical America (Guiana, &c.), and certainly one of the most brilliantly coloured species in cultivation. It is recorded as having been introduced into this country in 1820, but there is no figure of it in any of the magazines. The variety figured in the "Belgique Horticole" was introduced by Mr. Wallis in 1864 from the Amazon.

46. White Passion-flower (P. mucronata; P. albida, Bot. Reg. t. 677).—A tall, glabrous climber, with terete, somewhat succulent branches, cordate-ovate or nearly orbicular, obtuse often bristle-pointed, membranous leaves, 2½ in. to 3 in. in diameter; petioles ½ in. to 1 in. long furnished with two glands; stipules broadly ovate, sharp-pointed. Flowers scentless white, tinged with green, on long (4 in. to 6 in.), stout, fleshy peduncles, about 4 in. in diameter; bracts about an inch long, glandular on the margin, falling off very early; sepals and petals similar, except that the former are prominently keeled, and furnished with a large spur near the tip; coronet-threads few, yellowish, less than half the length of the petals. This is perhaps the best white or nearly white Passion-flower we have. It is a Brazilian species, and was introduced by Cunningham and Bowie in 1816.

47. Hellebore-leaved Passion-flower (P. pedata).—This species may readily be distinguished by its pedately seven-lobed leaves, resembling in this respect those of the Christmas Rose, borne on petioles 3 in. to 4 in long; leaflets membranous, pubescent, and toothed. Flowers 3 in. to 4 in. in diameter, on stalks 2 in. to 3 in. long; bracts very large, finely fringed on the margin; sepals greenish on the face, spotted with red; petals blue; coronet-threads nearly as long as the petals, deep red, banded with white, and violet tips. A native of the West Indies and New Grenada, introduced in 1781 by Mr. Francis Masson.

48. Four-glanded Passion-flower (P. quadriglandulosa; Tacsonia sanguinea, Bot. Mag. t. 4674).—A very handsome species, approaching P. coccinea in its foliage, except that in this some of the leaves are three-lobed, and the toothing is coarser and more irregular. Flowers about 5 in. in diameter, borne on stalks about an inch in length; involucral bracts very small, linear, subulate; sepals and petals similar, rosy-red with crimson shading, the former spurred; coronet-threads short, erect, and spreading at the tips, crimson and white. A native of the West Indies and Tropical America, introduced in cultivation in 1852. P. speciosa is an allied Brazilian species of great beauty, with downy three-lobed leaves and scarlet flowers, 6 in. in diameter, which deserves looking after by collectors

49. Vine-leaved Passion-flower (P. vitifolia; Tacsonia Buchanani, Illus. Hort., t. 519).—True to its name, this species presents a striking resemblance in the shape of its leaves to those of the Grape Vine, but they are more or less clothed with a rusty tomentum on the under surface, and often glandular on the margin. In its flowers it is one of the most magnificent species of a genus, truly perplexing in its extraordinary richness of beautiful and varied forms. The flowers have a very short coronet and are of a brilliant vermilion-red, about 4 in. in diameter, in the figure cited, and exceeding 6 in. in some dried specimens at Kew from Panama, which, moreover, appear to have been of a blood-red colour.

50. Middleton's Passion-flower (P. Middletoniana; Paxt. Mag. Bot., ix., 51).—This has similar foliage to the last, but the flowers are very different, having purplish petals and violet-purple, white-banded coronet-threads nearly as long as the petals. Dr. Masters thinks it may be a hybrid, though Paxton says it was raised from seeds collected by H. Middleton, Esq., either in the West Indies or South America.

51. Curled-coronet Passion-flower (P. cincinnata; Bot. Mag., t. 5735).—A very handsome species of recent introduction. It is a tall, glabrous climber, with rather stout, round branches and palmately five-lobed leaves, about 3 in. or 4 in. broad, on glandular petioles from 1 in. to 2 in. or more in length. Flowers about 3 in. in diameter, on stalks 2 in. to 3 in. long; bracts large, oblong, glandular at the base; sepals and petals similar, violet-blue, the former furnished with a short spur or horn; coronet-threads twisted, exceeding the petals, violet, banded with brown and white in the lower half; column short; anther yellow. This fine species was first discovered by Gardner, in 1837, in Brazil, and was introduced into cultivation in this country by Mr. Philip Frost about 1867.

52. Parkinson's Passion-flower (P. incarnata; Bot. Mag., t. 3697).—A glabrous or slightly pubescent climber, with deeply three-lobed saw-toothed leaves, 3 in. to 4 in. broad, and borne on petioles 1 in. to 2 in. long, with two large glands above the middle. Flowers violet or purple and white, about 3 in. in diameter, on stalks 4 in. to 6 in. long; bracts small; sepals and petals similar, the former spurred; coronet-threads spreading, exceeding the petals. This species is interesting in being probably the first cultivated in this country. Parkinson figures it in his "Paradisus" (1657), p. 395, fig. 7, and speaks of it as springing up late in the year, about the beginning of May, and flowering but rarely producing fruit; and describes it as a brave and too much desired plant. According to Aiton's "Hortus Kewensis," it was in cultivation in this country as early as 1629. Miller, in the first edition of his "Dictionary," says this sort is somewhat tenderer than any of the former (varieties of cœrulea). It dies to the surface every winter, and rises again the succeeding spring; and if the summer be warm will produce large quantities of flowers. Gerard (1597) speaks of a Passion-flower, probably this species, as growing and flowering in the garden of Mistress Tuggy at Westminster. This species is now rarely seen in gardens, as it is inferior in point of beauty to the varieties of the hardier P. cœrulea, and even in Miller's time the latter was fast displacing it. It is a native of the Southern States of North America.

53. Delicious Passion-flower (P. edulis).—This species is very near the last, and has frequently been confounded with it. Thus the plates 152 (incarnata variety) and 332 (incarnata) of the "Botanical Register," both represent varieties of P. edulis. One of the characters by which this may be distinguished is the position of

the glands on the petiole close at the base of the blade of the leaf. As an ornamental plant this is surpassed by many species, but its fruit is said to be superior to that of all others of the genus. A native of Tropical America, and commonly cultivated for its fruit.

54. Slender-stalked Passion-flower (P. membranacea).—A very remarkable species not in cultivation, with glabrous, almost circular, three-nerved, sub-peltate leaves, 2 in. to 3 in. in diameter, and borne on long slender petioles. Flowers about 2 in. in. diameter, subtended by orbicular, membranous (coloured), finely reticulated bracts, and borne on very slender stalks 3 in. to 5 in. long. Found on the Volcan de Agua, Guatemala, by Hartweg.

55. Smaller White Passion-flower (P. alba; Link and Otto Ic. Pl. Rar. Hort. Berol. t. 33).—A glabrous climber, with small (2 in. broad), three-lobed leaves, on relatively long, slender petioles; lobes oblong, obtuse, bristle-pointed, glandular, toothed in the sinuses; stipules ovate-lanceolate, acute, cordate at the base, and about an inch long. Flowers white, about 2½ in. in diameter, on stalks nearly equalling the leaves; coronet-threads slender, little more than half as long as the petals; anthers bright yellow. This is a very pretty white or rather greenish-white flowered species: native of Brazil. It was in cultivation at Berlin in 1828, and there is a specimen in Kew Herbarium grown in the Glasgow Botanic Garden.

56. Moore's Passion-flower (P. Mooreana; Bot. Mag. t. 3773).—A glabrous, somewhat glaucous species with very shortly-stalked, deeply three-lobed leaves, 4 in. to 5 in. long, subtended by conspicuously large, cordate-lanceolate, acute stipules, 1½ in. to 2 in. or more in length; lobes linear-oblong, obtuse or acute, toothed, lateral ones spreading at an angle of about 45°; petiole furnished with two very large glands. Flowers about 2½ in. in diameter, on stalks 2 in. to 3 in. long; involucral bracts cordate, toothed, exceeding the expanded flower; sepals and petals similar, white, the former spurred; coronet-threads variegated dark blue, and white at the base with lighter blue tips, about two-thirds as long as the petals, inner shorter ones purple; anthers large yellow. This is a very ornamental species. It was introduced from Buenos Ayres in 1837 by Mr. Tweedie, and is said to be probably as hardy as P. cœrulea, which it resembles in its flowers, and which are described as being very fragrant. Whether this did not meet the expectations of horticulturists, I do not know, but it does not appear to have been very widely dispersed in gardens.

57. Blue Passion-flower (P. amethystina; P. onychina, Bot. Reg., new series, i. t. 21).—A very slender, glabrous climber, with three-lobed leaves, 3 in. to 4 in. broad, on slender petioles, 2 in. to 3 in. long, and studded with several glands scattered throughout their whole length; lobes, oval-oblong, lateral ones spreading at nearly right angles. Flowers blue, with a purple centre, about 2½ in. across, borne on slender stalks, 3 in. or 4 in. long; bracts small, membranous, and falling away very early, not bractless, as described in the "Botanical Register"; sepals and petals similar, the former with a prominent spur; coronet-threads spotted with a darker blue, and purple at the base, about two-thirds the length of the petals; styles and anthers green and yellow, spotted with red. This is a very fine species, having flowers of a richer blue than any other in cultivation. It was first brought to this country by B. J. Sullivan, Esq., of H.M.S. "Beagle," who procured seeds of it from the Botanic Garden, Rio Janeiro, in 1827.

58. Loddiges' Passion-flower (P. filamentosa var. palmata; Bot. Reg., t. 584; Bot. Mag., t. 2023; Loddiges' Bot. Cab., t. 97).—A tall, shrubby climber with round, not angular, stems, and palmately five-lobed, more or less pubescent leaves, 4 in. ,to 6 in. across, and borne on two glandular petioles 1 in. to 2 in. long; lobes lanceolate, saw-toothed. Flowers about 3 in. in diameter, on stalks nearly or quite as long as the leaves; bracts oblong or nearly orbicular, finely-toothed, ½ in. to ¾ in. long; petals rather longer than the sepals, both pale blue; coronet-threads as long as the petals or sometimes even longer, reddish-purple at the base, followed by a white band and a black band, and the upper half dark blue. A very showy, free-flowering species, introduced from the West Indies, in 1817, by Messrs. Loddiges.

59. Fragrant Passion-flower (P. Actinia; Bot. Mag., t. 4009).—An exceedingly handsome, and a very distinct species. Tweedie's note accompanying his dried specimens is to the effect that he had met with no plant superior to this in the colouring and fragrance of its flowers. It is a shrubby, glabrous climber, with slender, cylindrical stems, entire, ovate, oval or nearly orbicular, somewhat coriaceous leaves, 2 in. to 3 in. across, glaucous beneath, notched at the apex, sometimes showing a tendency to become three-lobed, and borne on petioles about an inch long, the latter bearing four to six or more scattered glands. Flowers about 3 in. in diameter, borne on short stalks scarcely exceeding the petioles; bracts ovate-cordate, entire, about half an inch long; sepals and petals similar, white; coronet-threads as long as the petals, curled at the ends, and very elegantly and regularly banded with white and red, and tipped with blue; anthers large and yellow. This was first introduced by Messrs. Veitch, through their collector, Mr. Lobb, who found it in the Organ Mountains, Brazil, and sent it home in 1842. The specific name is given in allusion to the resemblance of the flowers to some of the Sea-anemones (Actinia).

60. Pea-green-leaved Passion-flower (P. glauca; Bot. Reg. t. 88).—A glabrous, glaucous climber with cylindrical, purplish stems, and three-lobed leaves, 3 in. to 4 in. across, rounded or cordate at the base, borne on petioles 2 in. or more in length, and beset with several glands; stipules large and conspicuous. Flowers about 3 in. across, on stalks equalling or exceeding the petioles; bracts ovate small; sepals and petals similar, sepals not spurred, white tinged with green, ultimately reflexed; coronet-threads nearly as long as the petals, violet in the lower part with white tips; anthers large, yellow; styles green, spotted with red. A native of the West Indies, first introduced by Messrs. Lee and Kennedy, of Hammersmith, in 1779. The plant called P. stipulata in gardens is probably the same.

61. Tweedie's Passion-flower (P. tucumanensis; Bot. Mag. t. 3636).—This species resembles the last in general appearance and in many particulars; but here the glands on the petioles are stalked, and the lobes of the leaves are glandular on the margin towards the base in the sinuses. The stipules are even larger, more than an inch long, broadly half-cordate, and coarsely-toothed; and the sepals are furnished with a spur or horn. The flowers, as represented in the "Botanical Magazine," are less than 2 in. in diameter, and the coronet-threads are banded with blue in the lower half. A native of Tucuman, in Chili, discovered and introduced by Mr. Tweedie in 1836.

62. Purple-leaved Passion-flower (P. picturata; Bot. Reg. t. 673).—A slender, glabrous climber, with equally three-lobed leaves 2 in. to 3 in. broad, reddish-purple beneath, borne on slender petioles 1 in. to 2 in. long and furnished with several stalked glands; stipules large, entire, terminating in a bristle-point. Flowers 2½ in. to 3 in. in diameter, borne on stalks about as long as the leaves; bracts reddish-purple, lanceolate or obovate, entire, nearly an inch long; tube of the calyx expanded at the base and then constricted; sepals and petals reflexed, similar, pink, the former furnished with a conspicuously long spur, projecting at least a quarter of an inch beyond the tip; coronet-threads reflexed over the petals, and about half as long, regularly banded with blue, black and white; anthers yellow; styles spotted with red. A native of Brazil, introduced by Mr. Lee, of Hammersmith, about the year 1820.

63. Common Blue Passion-flower (P. cœrulea).—This species deserves special prominence on account of its hardiness. It is recorded to have been first introduced in 1699, by the Duchess of Beaufort; and Miller, in the first edition of his "Gardeners' Dictionary" (1731), describes three varieties, and a sub-variety of P. angustifolia with yellow, blotched leaves, which some people, he says, "preserve as a great curiosity, but as this variegation is small and hardly to be seen in the vigorous shoots, so it is scarce worth mentioning." He was also aware of their hardiness, for he says they will endure our severest cold, though in very hard winters their shoots, or even their whole stems, are killed; but they seldom fail to shoot up again. He also mentions the narrow-leaved variety as fruiting very freely, but he had never seen fruit of the broad-leaved variety. However, this does not coincide with my experience. P. cœrulea is a glabrous climber, with angular branches, usually five-lobed (sometimes seven to nine), leaves on glandular petioles, 1 in. to 2 in. long; large, leafy stipules, large, oval, entire, bracts conspicuously awned sepals, and flowers about 3 in. across, and borne on stalks from 2 in. to 3 in. long. There are several varieties differing in the shape of the lobes of the leaf, and in the colouring of the flowers. In P. angustifolia the lobes are scarcely more than a quarter of an inch broad, and of nearly equal breadth throughout their whole length, which is from 2 in. to 3 in.; and other varieties exist presenting intermediate gradations up to 1½ in. in breadth, and 5 in. to 6 in. in length. P. glauca has remarkably pea-green or glaucous leaves. P. Neumanni (Paxt. Mag. Bot. xv., 270), supposed to be a hybrid variety, is probably only a seminal variety of cœrulea, for it is equally as hardy. It has greenish-white sepals and petals faintly tinged with pink, and the coronet-threads are banded with violet and white, with blue tips; and the large anthers are yellow. A plate in the Bot. Mag. (28) represents the ordinary broad-leaved variety, having petals more deeply tinged with red, and the coronet-threads crimson, instead of violet, at the base. This species is a native of Uruguay.

64. Crimson Passion-flower (P. reflexiflora; Cav. Icones, v., 422).—A very distinct species, perfectly glabrous in all its parts, with unequally three-lobed, sub-peltate, glaucous leaves, cordate at the base, 2 in. to 3 in. long, borne on slender, glandular petioles; lobes oval-oblong, obtuse, minutely notched at the apex, the central one twice as long as the lateral ones which diverge at right angles, often glandular on the margin in the sinuses. The crimson flowers are remarkable in this section in having a narrow cylindrical tube about an inch long, reflexed sepals and petals of about the same length. Coronet reduced to a narrow fringe at the mouth of the tube, and the column exserted about 1½ in. The involucral bracts are small, and the peduncle varies from 2 in. to 6 in. in length. A native of Guatemala and Peru; not cultivated in this country, so far as I know, but it is in the St. Petersburgh Botanic Garden, according to Dr. Masters' list.

65. Emperor Passion-flower (P. racemosa; Bot. Reg. t. 285; Bot. Mag. t. 2001; P. princeps, Lodd. Bot. Cab. t. 84).—This is one of the most familiar species, and there are several magnificent hybrids in cultivation, of which this is one of the parents. It received its specific name on account of the flowers being usually, in luxuriant plants, borne on long, leafless festoons at the ends of the branches. The glabrous leaves are nearly equally three-lobed, and almost leathery when old; lateral lobes, spreading or directed upwards, entire, acute; stipules large, leafy, obliquely cordate-ovate. Flowers 4 in. to 5 in. in diameter, with a short, broad tube, inflated at the base, borne on short stalks; bracts ovate, less than half-an-inch long, falling away before the flowers expand; sepals and petals of a rich crimson both within and without, the former considerably longer than the petals and prominently keeled at the back, the keel projecting at the tip in the form of a short spur; coronet-threads little more than half-an-inch long, dark blue or purple tipped with white. A native of South Brazil, introduced into this country by Messrs. Loddiges about the year 1815.

66. Radd's Passion-flower (P. Raddiana; P. kermesina, Bot. Mag., t. 3503; Bot. Reg., t. 1633).—A slender, perfectly glabrous climber, with nearly equally three-lobed leaves, 3 in. to 4 in. across, cordate at the base, and, as well as the leafy stipules, purplish-violet beneath; petioles slender, usually exceeding an inch in length. Flowers about 3 in. across, borne on long stalks, often more than 6 in. long; sepals and petals almost exactly alike, rosy-red on both sides, eventually reflexed; coronet-threads dark bluish-purple, less than a third as long as the petals; column yellow, spotted with red. This attractive species is a native of Brazil, and was first cultivated in this country in the gardens of the Horticultural Society, having been brought over from the Berlin Garden in 1831 by Mr. Bentham. It is an extremely profuse bloomer, and, in short, it may be described as one of the most desirable of the genus.

†††† *Bracts free, leafy; flower-tubes short, fleshy.*

67. Hahn's Passion-flower (P. Hahni; Disemma Hahni, Rev. Hort., 1859, p. 430, with a coloured plate).—A very glabrous, slender climber, with oval, peltate leaves about 3 in. long, and obscurely three-lobed at the apex, having a reddish tinge below, and borne on relatively long petioles: stipules leafy. Flowers about 3 in. in diameter; sepals and petals similar, white; coronet-threads yellow, curled, about two-thirds as long as the petals. A handsome Mexican species, in cultivation in Paris in 1857. Its flowers approach as nearly to a pure white as any of the genus.

Sub-genus II.—Tacsonia.

Flowers more or less funnel-shaped, with a tube usually as long or longer than the sepals and petals; coronet-threads usually much less than half the length of the petals, except in P. pinnatistipula (see also No. 64).

Section I.—Bracts free.

68. Kerner's Passion-flower (P. adulterina; Kerner, Hort., 284).—A climber with rather stout, woody, cylindrical branches, shaggy when young. Leaves oblong, obtuse, obscurely-toothed, glabrous and wrinkled above, clothed beneath with a white or fawn-coloured shaggy tomentum, 2 in. to 4 in. long, borne on stalks about a quarter of an inch long. Stipules linear. Flowers rose-coloured, about 4 in. long, borne on shaggy peduncles about an inch long. Bracts free to the base, lanceolate, entire, ultimately glabrous. Tube of the flower quite glabrous; sepals about an inch long, terminating in a minute bristle, slightly exceeding the petals. This fine species does not appear to have been cultivated in this country, though it was probably in Continental gardens formerly, as Kerner figures it in his "Hortus Sempervirens," an exceedingly rare book, which I have not been able to consult. It is a native of the mountains of New Grenada.

69. Lance-leaved Passion-flower (P. lanceolata).—This is another species with undivided, lanceolate leaves, which are glabrous on both surfaces, very acute, and somewhat coriaceous. The stems are slightly angular and hairy when young, as well as the fringed stipules and bracts. Flowers glabrous, 4 in. to 5 in. long, colour unknown to me. A native of the mountains of Peru, not yet in cultivation.

70. Miniature Passion-flower (P. gracilens).—A small, slender creeper, glabrous in all its parts. This is noticed here on account of its very distinct character, being quite a miniature plant in comparison with all the others of this section. The three-lobed leaves scarcely exceed an inch from tip to tip of the lateral lobes, and the flowers are about an inch in length. A native of the mountains of Peru; not in cultivation.

71. Mrs. Marryat's Passion-flower (P. pinnatistipula; Bot. Mag. t. 4062; Bot. Reg. t. 1536).—A lofty climber, having the young branches, petioles, and the under surface of the leaves densely clothed with a white, woolly down, interspersed with glands. Leaves deeply-three-lobed, cordate at the base, somewhat leathery, rugose above, veins prominent below; lobes 3 in. or 4 in. long, lanceolate, acute, sharply toothed, lateral ones diverging almost at a right angle. Stipules small, pinnatifid, with very narrow, more or less glandular segments. Tendrils not branched. Peduncles 2 in. to 3 in. long. Involucre of three cordate-toothed, glandular bracts. Flowers about 4 in. in diameter, rich rose-pink with a blue coronet. Calyx downy on the outside, with a cylindrical tube about an inch long, and five spreading lobes of about the same length, nearly white inside, according to the "Bot. Magazine" plate, and nearly as highly coloured as the petals in the "Botanical Register." Petals oblong, slightly exceeding the calyx-lobes. Coronet consisting of one series of spreading slender threads inserted on the thickened mouth of the tube. Stamens with yellow anthers standing up an inch above the mouth of the tube. Fruit yellow, globular, downy, about the size of a hen's egg, edible according to Hartweg. This very ornamental species was first cultivated in this country in the garden of Mrs. Marryat, of Wimbledon, where it was raised from seed procured about the year 1830 from Chili. A Banksian medal was awarded to the introducer. It flourishes best in a greenhouse.

72. Van Volxem's Passion-flower (P. Van Volxemi; Bot. Mag., t. 5571; P. antioquensis, Karsten, Fl. Colomb., t. 71).—Stems slender, climbing to a great height or length, slightly hairy as well as the under surface of the leaves, petals, and peduncles. Leaves membranous, deeply three-lobed, cordate at the base, from 4 in. to 8 in. long, borne on short glandular stalks; lobes lanceolate, acute, with rather distant, short, sharp teeth, stipules inconspicuous. Flowers brilliant red with a yellow centre in the cultivated variety, about 6 in. in diameter, pendent on very long, slender stalks, often 1 ft. to 2 ft. in length, and bearing three small bracts a short distance below the flower. Calyx-tube green, enlarged at the base, almost or quite hairless, about an inch long; lobes similar in shape and colouring (on the face) to the petals, green at the back. Coronet very small and inconspicuous. Anthers yellow, borne with the ovary about 2 in. above the mouth of the tube. This magnificent greenhouse climber is a native of the mountains of New Grenada, at an elevation of from 7000 to 8000 ft. It was introduced by M. Van Volxem, a Belgian amateur, in 1859, and it created a great sensation among horticulturists at the time, being the most brilliant of the genus then known, though it has since been eclipsed by the subject of our illustration. In a wild state it presents several variations. Thus in Kew Herbarium there is a variety with almost simple leaves, and apparently violet red flowers, from Mr. R. B. White, who describes it as growing in a cold climate, of a mean temperature of 12° centigrade (53° 6 Fahr.) The fruit is an elongated sort of Granadilla, and of a very agreeable flavour. P. flexipes, of Planchon and Triana, is also regarded by Dr. Masters as a variety of this species, but he has omitted to mention it in his enumeration. It has a longer calyx-tube, and a hairy instead of glabrous ovary, and differs in some other particulars from the type.

73. Greame's Passion-flower (P. insignis; Bot. Mag., t. 6069).—A tall-growing climber, with woody stems, having all the young parts, including the outside of the flowers and the ovary, clothed with a dense pale or rusty wool. Leaves leathery, undivided, full-sized ones upwards of 6 in. or 7 in. in length, ovate-lanceolate, irregularly toothed, densely woolly beneath, glabrous and wrinkled above, borne on stout glandular stalks, from half-an-inch to 1 in. in length; stipules small, divided into thread-like segments. Peduncle 6 in. to 8 in. long, much stouter than in the preceding. Bracts very large, irregularly cut at the margin. Flowers pendulous, 6 in. to 8 in. in diameter; sepals oblong, keeled, violet-crimson, the keel terminating in a green spur an inch long; petals shorter than the sepals, of a rich dark crimson, rounded at the tips. Coronet consisting

of one series of white and blue threads about half-an-inch long, closing the mouth of the tube. Anthers yellow and stigmas green, elevated almost 2 in. above the petals. The history of this magnificent plant is somewhat obscure. It was first flowered in 1873 in this country by Mr. Anderson, gardener at Sowerby House, Hull, who states that it was raised from seed sent home from South America some years previously by Mr. Yarborough Greame. There are no wild specimens of it in Kew Herbarium.

74. Jameson's Passion-flower (P. Jamesoni).—A glabrous climber, with slightly angular branches, three-lobed, spiny-toothed, coriaceous leaves, with the general aspect of those of a Berberis; lobes oval, oblong, obtuse or acute, lateral ones divergent, from 2 in. to 3½ in. from tip to tip; petioles about half-an-inch; stipules large as well as the involucral bracts deeply fringe-toothed or almost prickly. Flowers very large, 5 in. to 6 in. long before opening, and 4 in. to 5 in. in diameter when open, borne on stalks about 2 in. in length; sepals and petals similar, saving that the former have a short awn, oblong. This magnificent species was discovered by the late Professor Jameson in the Andes of Quito, and has not yet been introduced. I have seen only dried specimens, and there is no indication of the colour of the flowers on the accompanying labels, but they are probably some shade of red or rose. Judging from the dried specimens above, this must be one of the finest species of this section.

75. Purdie's Passion-flower (P. floribunda; Rathea floribunda, Karsten "Flora Colomb." i., t. 38).—This is a glabrous, or almost glabrous climber, with deeply three-lobed leaves, having a wedge-shaped base; lobes lanceolate, very acute, sharply-toothed; central one 3 in. to 4 in. long; lateral ones about half-an-inch shorter ascending, that is, forming acute angles with the central one. Stipules and involucral bracts obscurely toothed; flower-stalks slender, about 3 in. long. Flowers about 3 in. long, narrowly bell-shaped; sepals with a fine awn about an eighth of an inch long. A native of New Grenada, discovered by Mr. Purdie, remarkable for its somewhat bell-shaped flowers before the sepals and petals are turned back.

76. Three-leafleted Passion-flower (P. trifoliata).—This species is easily distinguished from all others of the Tacsonia group by its leaves being divided into three separate leaflets. The whole plant, or at least the young parts, except the inside of the flowers, is clothed with a dense, short, white, grey, or yellowish down. The leaflets are extremely variable in shape, from linear-lanceolate to broadly oval or elliptical, entire, and about 2 in. to 3 in. long. Stipules large, fringed, as are also the very large nearly orbicular involucral bracts. Flowers of medium size, rosy-red (Pearce), borne on very stout stalks from 3 in. to 4 in. long. A native of the mountains of Peru and New Grenada. Mr. Pearce, who collected for Messrs. Veitch, met with it at Huanuco, at an altitude of 11,000 ft. He describes it as an evergreen climber. I am not aware that he introduced living plants of it.

Section II.—Bracts united at the base.

77. Hartweg's Passion-flower (P. manicata; Paxt. Fl. Gard., t. 26).—A climbing species, with slender branches, young parts more or less pubescent, remarkable for its short calyx-tube. Leaves about 3 in. broad and long, three-lobed to about the middle; lobes rounded, lateral, shorter than the central one. Petiole about three-quarters of an inch, beset with large glands. Stipules large, kidney-shaped or round, deeply toothed. Flowers of a rich brilliant scarlet, borne on a stalk from 1 in. to 2 in. long, and subtended by large, entire, hairy bracts, equalling the calyx-tube. Sepals and petals similar, except that the former are green outside and slightly keeled, the keel terminating in a short spur. This species is a native of the Andes of Peru, Ecuador, and New Grenada up to an elevation of 7000 ft. It was introduced by the Royal Horticultural Society, through their collector Hartweg, and figured by Paxton in 1850. In gardens this species commonly bears the name of P. ignea.

78. Cavanilles' Passion-flower (P. peduncularis; Cavanilles' Icones, pl. v., t. 426).—This species was in cultivation, according to London, in 1815, but no figure of it exists in any of the magazines. The stems are angular, and only slightly hairy, and the leaves are very similar in shape to those of P. manicata, becoming nearly glabrous with age, and the various stipules are longer and irregularly cut. The flowers, which are described as rose-coloured, are about 2½ in. in diameter, and are borne on stout peduncles 4 in. to 6 in. long, and the bracts are united very high up, forming a cup enclosing the very downy calyx-tube. Sepals very hairy on the outside, and furnished with a short spur, rather longer than the rounded petals. Fruit hairy, spherical, about 1½ in. in diameter. This inhabits the tropical region of Peru.

79. Velvety Passion-flower (P. mollissima; Bot. Mag., t. 4187).—A tall climber, clothed all over, including the tubular involucre, with a very soft down. Branches round, not angular. Leaves three-lobed, cordate in outline; lobes oblong-lanceolate, acute, regularly toothed, the lateral ones directed upwards; petioles ½ in. to 1 in. long. Flowers pink with darker rose shadings, quite glabrous, borne on peduncles 2 in. to 3 in. long; tube of the calyx green, about 4 in. long, glandular at the mouth, without any coronet. Sepals and petals similar on the face, the former furnished with a short spur, which issues from just below the tip on the outside. Stamens and styles not protruding far from the mouth of the tube, and the ovary just on a level with it. This valuable free-flowering greenhouse climber was sent home by Mr. W. Lobb to Messrs. Veitch [and by Mr. Hartweg to the Horticultural Society at about the same time, in the year 1842. It inhabits Peru and New Grenada, ascending to an altitude of nearly 10,000 ft. A cool conservatory or greenhouse suits this plant best, and it is very impatient of heat.

80. Variable Passion-flower (P. mixta).—This is a rather variable species of the mollissima type, differing from the species named in its angular stems and more coriaceous leaves, which are usually quite glabrous above. Dr. Masters arranges the forms under the following sub-species and varieties:—Sub-species 1, P. normalis (Passiflora Tacso, P. longiflora); stem, leaves, and tube of the flower glabrous, lobes of the leaves oblong-lanceolate, reticulate beneath, sometimes hoary; petiole furnished with stalked glands. I have not seen this in cultivation. Sub-species 2, P. tomentosa, leaves hairy on both surfaces or only beneath, three-lobed beyond the middle; lobes ovate-lanceolate, serrate; petiole with stalked glands; involucre usually coloured slightly hairy. Variety speciosa, stem almost terete, glabrous; leaves glabrous above, tomentose beneath, lobes oblong-lanceolate with remarkably hooked teeth; involucre pubescent, unequally two or three lobed at the top. There is a very good plate of this in the "Florist and Pomologist," 1871, p. 169, from a plant that flowered very profusely the previous summer at Chiswick. It has rich, carnation-red flowers on short stalks, and was introduced from New Grenada by Mr. Bowman. In this, as in all this set, the coronet is very small. Sub-species 3, P. quitensis, stem velvety; leaves becoming glabrous above, velvety beneath, lobes ovate or ovate-oblong; petiole furnished with sessile glands; involucre pubescent, usually equally three-lobed at the summit. Variety P. eriantha, pubescence snowy white, nerves of the leaf strongly reticulated on the under surface. This has rose-pink flowers, and is figured in the "Botanical Magazine," t. 5750, from specimens grown in the garden of J. A. Henry, of Edinburgh, sent thither by Professor Jameson, who describes it as a native of the Volcano of Pichincha, growing at the upper limit of the forest regions, from 11,000 to 13,000 ft. above the sea in a cold, foggy climate. It is an extremely ornamental climber for a cool house.

81. Polished-leaved Passion-flower (P. glaberrima).—A tall, glabrous climber, with round or slightly angular branches. Leaves cordate, three-lobed, coriaceous, very glabrous, borne on stalks about 2 in. long, with two to four glands near the base of the blade; lobes broadly ovate-acute, with thick, fleshy teeth; stipules large, an inch long. Flowers glabrous, about 6 in. long; involucre coloured. This handsome species does not appear to be in cultivation yet. It is very distinct from all the others of this section in being perfectly glabrous in all its parts. The lateral lobes of the leaf diverge at a right angle and measure from 4 in. to 8 in. from tip to tip; the colour of the flowers is not given, but from dried specimens it would appear to be a deep red. It inhabits the temperate regions of the Andes of Peru and Ecuador.

82. Small-leaved Passion-flower (P. parvifolia).—A very leafy, evergreen climber, with angular stems, slightly hairy when quite young, and small, three-lobed, coriaceous leaves, borne on relatively long petioles. Lobes 1 in. to 2 in. long, oval-oblong, serrated, glabrous above, slightly hairy beneath when young, lateral ones spreading scarcely so long as the central one. Flowers sometimes as much as 6 in. long in the wild state, violet and rose, and exceedingly handsome, according to Mr. Pearce, who collected this species in Ecuador, at an elevation of 10,000 ft. to 12,000 ft. Involucre 1½ in. to 2 in. deep, of a more intense colour than the tube. This fine species does not appear to be in cultivation. It has a wide range of distribution in the mountains of Peru, Ecuador, and New Grenada.

There are several other species of true Tacsonias, all more or less ornamental, as Mandoni, with broadly three-lobed leaves, the lateral lobes much shorter than the central one, glabrous and wrinkled above, downy, with prominent veins beneath, free, involucral bracts, and very large white or pink flowers, downy outside; rugosa, with undivided, wrinkled, ovate leaves, united, involucral bracts and large

deep-coloured flowers; ampullacea and urceolata with three-lobed leaves, and remarkable in the tube of the flower having a spherical expansion at the base; Matthewsi, of the mollissima type, but with glabrous leaves, cuneate at the base; and tomentosa, anastomosans, and bicoronata, close allies of the same species.

A List of the Species and Varieties described.

THE names in *italics* are either synonyms or varieties, or species incidentally mentioned under the respective numbers. Most of those belonging to the sub-genus Tacsonia were published under that name; but as the same specific name has been invariably retained, it was not considered necessary or desirable to repeat the names again under Tacsonia as synonyms.

Actinia	59	*glauca*	1	*onychina*	57
adiantifolia	28	*gossypifolia*	6	*pallida*	4
adulterina	68	graciliens	70	parvifolia	82
alata	40	gracilis	2	pedata	47
alba	51	*hederacea*	4	peduncularis	78
albida	46	Hahni	67	penduliflora	22
amabilis	42	Herbertiana	24	perfoliata	30
amethystina	57	*hirsuta*	4	*phœnicea*	40
anastomosans	82	holosericea	12	picturata	62
angustifolia	4	*ignea*	77	pinnatistipula	71
angustifolia	63	incarnata	52	*princeps*	65
antioquensis	72	insignis	73	*punctata*	10
appendiculata	8	Jamesoni	74	*punctata*	23
arborea	1	Jorullensis	19	quadrangularis	39
aurantia	27	*kermesina*	66	quadriglandulosa	48
auriculata	8	lanceolata	69	*quitensis*	80
Banksi	25	laurifolia	43	racemosa	65
bicoronata	82	ligularis	36	Raddiana	66
biformis	3	*longiflora*	80	reflexiflora	64
bryonoides	23	*Lowei*	36	*riparia*	41
Buchanani	49	lunata	18	rotundifolia	11
capsularis	16	lutea	23	rubra	15
ciliata	6	macrocarpa	41	*sanguinea*	48
cincinnata	51	maliformis	35	sanguinolenta	34
cinnabarina	26	*Mandoni*	82	serrata	38
clathrata	5	manicata	77	serratifolia	44
coccinea	45	*marmorata*	17	sexflora	7
coerulea	63	*Matthewsi*	82	*sicyoides*	23
colorata	41	*Maximiliana*	23	*speciosa*	80
coriacea	3	*Medusæ*	19	*stipulata*	60
cuprea	32	membranacea	54	suberosa	4
difformis	3	Middletoniana	50	*Swartzi*	23
discolor	23	*Miersi*	41	*Tacso*	80
edulis	53	*minima*	4	tomentosa	82
eriantha	80	mixta	80	*tomentosa*	80
erythrophylla	20	mollissima	79	trifasciata	13
filamentosa	58	Moorcana	52	trifoliata	76
filipes	21	mucronata	46	triloba	37
floribunda	75	Murucuia	29	trinervia	33
floribunda	7	*Neumanni*	63	truncata	9
fœtida	6	*nigelliflora*	6	tuberosa	10
fulgens	45	*nitida*	43	tucumanensis	61
glaberrima	81	*normalis*	80	Van Volxemi	72
glabra	28	oblongata	31	Vespertilio	14
glandulosa	41	odora	23	vitifolia	49
glauca	60	organensis	17	*Warei*	4
glauca	63				

W. B. HEMSLEY.

Bearing Reins off Mowing-machine Horses and Ponies.—These should be discarded. Hardly has the machine got into full swing, so as to ease the draught, than the horse has to stop or turn round, and the speed is slackened, or the machine brought to a standstill. The horse again bends forward for purchase, and, incredible to relate, is pulled up by an instrument of torture in the form of a bearing-rein. It is thus arrested in the exercise of its strength, and, at the same time made to suffer unnecessarily. Bearing-reins on carriage or cart-horses are kindness itself compared with those on horses mowing. When a carriage is once started on a level road, the horse neither wants to use his shoulders nor head much; but mowing consists in a great measure of turns and stoppages. At each fresh start the bearing-rein fetters the power and inflicts pain. Mowing is always bad enough without adding cruelty to weary sameness of walking forwards and backwards for nine or ten months in the year. The least one could do, therefore, is to let the horse have the free use of its head and mouth.—D. T. FISH.

The Scarlet Larkspur (Delphinium nudicaule).—Your commendation of this plant is well deserved. Although somewhat apt to damp off on level ground, it is a true perennial on rockwork, and has the good quality of keeping up a long succession of bloom. It is as easy to raise from seed as other Larkspurs.—SALMONICEPS.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Pelargoniums.—Zonal Pelargoniums are useful plants to succeed the show and fancy kinds, as, owing to their continuous habit of flowering, they can be had in bloom at almost any time of the year by means of a little forethought as regards preparation. Cuttings struck last summer or autumn, if they have been potted on as recommended earlier in the season and encouraged to make growth, will be quite as useful as older plants, as it is by no means desirable to grow them too large when wanted for ordinary decorative purposes, especially where glass accommodation is limited. Keep them as near the glass as possible, giving them plenty of air and no shade as the pots get full of roots, in which state only will they bloom freely; give them manure-water once or twice a week, this will be found much better than putting them in larger pots. Some of the later autumn-struck cuttings should be moved into 6-in or 7-in. pots for winter flowering, and at once plunged in ashes in an open sunny situation, where the growth, as it is made through the summer, will get thoroughly solidified; this is essential as regards their flowering freely in the winter, for if the growth be at all soft when they are submitted to the little warmth necessary to induce them to bloom, they will run to leaf; the chief object through the hot summer weather is to get the shoots almost as hard as dried sticks, with small, stunted leaves, and the balls a compact mass of roots. Amongst scarlets, the best hitherto has been Vesuvius, but this excellent variety will now, no doubt, be surpassed by the semi-double kind called Wonderful, which is a sport from Vesuvius with the habit of that kind in everything except the semi-double condition of the blooms, which in this, as in other flowers when double, are much more persistent than when single. Any of the free-flowering pink varieties, such as Christine Improved, will be found good companions to the above-named scarlet; but although plants in this section have much to recommend them for the above purposes, I should by no means advise their being grown, as they often are, in such quantities as to limit the space for other things, and give the structures in which they are kept the appearance of being nothing but houses devoted to Pelargoniums. Collections of any species of flower, particularly such as require the protection of glass houses at some time of the year, are generally a mistake, precluding the possibility of sufficient variety, which is the greatest charm in a garden.

Chrysanthemums.—Plants of these that were struck in spring, if not already in their blooming pots, should at once be placed in them; later-struck plants require pots quite as large as those that were struck at the end of December or beginning of January, and for ordinary decorative uses will do as well, but under no course of treatment will they produce such a number of perfectly developed flowers, simply because the growth has not the chance of getting so thoroughly matured, which, even in the case of soft-wooded subjects, is indispensable. The earliest struck plants that were transferred to their flowering-pots some time ago should, so soon as the roots get fully in possession of the soil, receive a regular supply of manure water. Even to Chrysanthemums it is possible to apply it too strong, but they will bear it much less diluted than most plants. The frequent advice given not to use liquid stimulants to Chrysanthemums until the flowers are set is a mistake. Chrysanthemums, like most other Chinese plants, are exceedingly gross feeders, and to grow them well they require, in all stages of their existence, the application of rich manure-water such as few plants will bear, and, in the absence of which, their flowers will neither be so perfect nor abundant, nor the plants clothed with foliage down their leaves.

Chinese Primulas.—In order to have these robust and well flowered in autumn and winter, their wants must be well attended to. They do not like full exposure to the sun, but nevertheless they want plenty of light and air, and, at the same time, they do not like the soil saturated with water. The most suitable place for them during the summer months is in an ordinary garden frame placed so as to face the north, on the north side of a wall sufficiently high enough to screen them from the sun during the hottest part of the day. Such frames should either be so shallow that the plants will stand with their heads close to the glass, or they should be filled up with ashes on which the plants may stand thus elevated, otherwise, the leaves get weak and drawn, in which condition not only are the plants unsightly and liable to damp off in the winter, but they can never be induced to produce more than half the quantity of flower they will do if well prepared in the early stages of their existence.

Cinerarias.—These also require to be equally well looked to, but the treatment which they need is different in some respects from that required by Primulas; Cinerarias, too, cannot bear full exposure to the sun, but they want all the light they can have by keeping them close to the glass; they also need a fair amount of air, but must have

the atmosphere around them damp by keeping the ashes on which they stand always moist; they likewise require their roots being kept constantly wetter than those of Primulas. The moment green fly appears, dip the affected plants in Tobacco or Quassia water.

Peaches and Nectarines on Open Walls.—As these increase in size attend to thinning any that may be too thick, bearing in mind that it is a decided loss to have them too crowded. When more are left on the trees than they can support not only is permanent injury done to the trees, but the weight of the crop is by no means increased in proportion to the numbers grown. When too many are left there is a preponderance of skin and stones in place of full-fleshed, large, handsome fruit; gradually, and not all at once, expose each fruit to the full action of the sun by removing all the leaves that obstruct its coming directly upon them; by this means only can the requisite colour be imparted to them, and without which the largest examples are deficient in both flavour and appearance. At the same time do not by any means denude the trees of leaves too much, or the root power will be correspondingly weakened: where the portion of a leaf at its extremity only overhangs a fruit, break the leaf off in the middle, the part that is left, if free from insects, will remain in a healthy state upon the tree to fulfil its allotted functions so far as its reduced dimensions will permit, as long as if it had been left entire. This I have proved in practice times too numerous to mention. Never remove an entire leaf to thus expose the fruit to sun and air, when taking away one-half will answer the object. Keep the trees regularly syringed with clean water, standing sideways in doing the work so as to get the water well to the underside of the leaves, or it will only be partially effectual; give abundance of water at the roots also when the weather is dry; remove all superfluous shoots so that the full strength of the trees will be directed to the production of good bearing wood for another year.

Strawberries.—Those who have the convenience and are desirous to grow pot Strawberries should at once see to laying some runners in pots as soon as any are ready; there is nothing like doing this work in time, for upon the thorough preparation of the plants depends the crop they can be induced to bear. For the purpose 3-in. pots should be used; put a bit of turfy loam in the bottom of each for drainage, fill up with fine rich soil of a moderately heavy nature such as accords best with this fruit, and then with an ordinary planting trowel make holes in the ground where the pots are to be, in which plunge them up to the rim; so managed they will not dry so quickly, consequently, a good deal of labour will be saved in watering, for if ever allowed to get very dry they will be seriously injured; after the pots are plunged, the runners must be placed on them, laying a stone the size of a hen's egg upon each to keep it in its place until rooted, when they will need transferring to 6-in. pots.

Kitchen Garden.—Continue to plant out successional crops of Cauliflowers, Broccoli, and Winter Greens, choosing, if possible, showery weather. It is only in peculiar soils and situations that very late-sown Peas do much good; in most places, if put in the ground after this time they produce little, but where they are found to succeed, a few of some early kind may at once be sown, choosing the most open available spot, where they will be under the full influence of sun and air, which are the best preservatives against mildew, which is usually the greatest bane of late Peas.

Greenhouses.

The multitude of flowering plants available at this season for decorating the above structures is apt to make one forgetful that during the autumn and winter such subjects become scarce, unless due preparation be now made by growing on others of a suitable character to supply their places. The ever-popular Chrysanthemum is sure to suggest itself for this purpose, and plants of these should at this time be in a forward state and receive the attention their merits deserve. Their strong-growing nature and robust habit render frequent potting unnecessary; they may therefore be transferred at once to the sizes requisite for flowering them in. These should be proportionate to the strength of the plants and suited to the varieties to be treated; for the large-flowering kinds require more root-room than the compact and less vigorous Pompones. There is, however, little danger of overpotting, provided ordinary care in watering be taken for a short time afterwards, till the plants get possession of the new soil. After receiving their final shift, they should be plunged in an open situation where they can get the full benefit of the sun during the greater portion of the day, but in such a position as to be sheltered from strong winds, as no amount of support by way of stakes and tying will prevent them from becoming injured after they get heavily weighted with foliage if the autumnal gales can attack them. To prevent worms effecting an entry through the bottoms of the pots, they should either be placed on small pieces of slates or tiles, or a bed of coal ashes made thoroughly solid, as the constant watering Chrysanthemums require is sure to attract these plant-destroyers, and unless means be adopted to keep them out, they either block the drainage or perforate the ball in such a manner as to let the water pass through without benefiting the plants. In either case, the mischief they cause is equally bad, and therefore no pains should be spared to prevent their ingress. Any subjects that may show signs of their presence should be carefully knocked out when the ball is tolerably moist, as then they may generally be found in the outer cavities, from which they can be readily removed and destroyed. Almost any kind of plunging material will answer, as the object in using it is merely to protect the pots from the direct influence of the sun, for when that is allowed to strike them with full force it is almost impossible to keep them properly supplied with water, an insufficiency of which soon affects the health of the plants, and shows itself in naked stems, disfigured leaves, and a great paucity of good blooms. Any that are becoming pot-bound, and which it may not be desirable to shift into larger sizes, should now be well supplied with manure-water, which may be given them at least twice or thrice a week, or even more frequently if applied in a weak state, a course that is far better in all cases than stronger doses at long intervals. Such moisture-loving plants as Chrysanthemums and others of a like nature, are much handier for water when they can be placed near the margins of walks, but in such positions plunging material of any kind would have an untidy, objectionable appearance; to meet this difficulty, the pots may be dropped into others of large size, which will afford in part the shade and shelter so necessary to prevent a too rapid desiccation of the roots. It often occurs in furnishing, that small plants, if healthy and well grown, are more serviceable than such as have attained a large size, as they can be grouped in amongst others or used in positions, such as rooms, &c., where the latter could not be accommodated. Good Chrysanthemums may be obtained for purposes of this kind by layering some of the strong leading shoots and keeping them well supplied with water till rooted, when they may be severed and attended to with the ordinary collection.

Solanums of the capsicastrum type should now be encouraged as much as possible in order to induce them to make an early growth and get them into bloom, as much of their usefulness for winter decoration depends on the time the berries are set. See that the plants are well supplied with water, as dryness at the roots is sure to engender red spider on the leaves, and cause the flowers to fall. A slight mulching of half-rotten manure laid round their stems as far as the roots extend, will be of the greatest service in keeping them in a uniform state of moisture, and thereby contribute to a successful "set." Stop any strong shoots that appear likely to take the lead and throw the plants out of shape. Stake and tie to afford the necessary support before they get heavy-headed or liable to injury from the force of strong winds.

Linum trigynum, a good old winter-blooming plant, will now require the closest attention to make it in anything like good condition, as few subjects are more liable to the attacks of red spider, or more quickly injured when so infested. Nothing but frequent syringings, moderate shade for a few hours during the hottest part of the day, and a constantly uniform state of moisture maintained at the roots, will keep it free from these troublesome pests. In syringing, the water should be applied with some force, and in such a way that the under side of the leaves becomes wetted, as it is generally in those positions these little marauders effect a lodgment. A pit or frame where these plants can be shut up closely immediately after being damped down, suits them best at this season of the year, as there they are more under control, and can be treated in accordance with their requirements much better than if placed among other plants.

Libonias.—These seldom flower well unless fully exposed to sun and air, and this should be done as soon as the growth is sufficiently forward, that the young shoots may become ripe and matured. Shift on into larger pots as they require more root-room, using a light, rich soil for the purpose, and syringe overhead to keep them clear of red spider. Later on in the season the plants should be placed out in the open air or have the lights removed from them altogether, and, when so treated, there are few things that flower with the same amount of freedom or are more useful for decorating the greenhouse or conservatory during the dull months of winter and early spring. The growth and habit of L. floribunda and L. penrhosiensis is so dense and uniform that little attention by way of stopping and training is requisite to keep them in shape, but the fragile branches of the latter generally require a little support, which they should receive at once, to keep them erect.

Salvias.—These are indispensable where a supply of winter-blooming plants is desired, and when well grown, make a gorgeous display. Associated with light-coloured Chrysanthemums and the

grand old Richardia æthiopica, the effect is most striking, their brilliant crimson flowers appearing all the brighter from the contrast afforded by the pure white of the latter. To keep them clothed with healthy green foliage down to the pots, they must have liberal treatment and never be allowed to suffer from want of water or the requisite root-room. In re-potting, give them a good rich loam, and if the plants be required of large size, they should at once be shifted into 12-in. or 15-in. pots, in which they will make fine specimens if properly looked to and supplied with water. Stand them on a good hard bottom of coal ashes to prevent worms penetrating to the roots, and in such a position as to be sheltered from strong winds, as their brittle nature renders them liable to injury despite all that can be done in staking and tying. The pots of these, like Chrysanthemums and other plants that have to be grown in full sun, must be shaded in some way, or there will be much difficulty in keeping them properly supplied with water and the plants in a healthy condition, on account of the injurious effect such a rapid drying of the soil has on them.

Richardias that have done blooming, or are wanted early in the winter for that purpose, should be planted out at once in partially shaded situations where water can be easily administered, of which they will take unlimited quantities. In turning them out, dig and mix some manure well in with the soil in the positions it is intended the plants should occupy, and in planting keep the crowns low that a slight basin may be formed round them for the purpose of holding sufficient water, in order to soak their roots well. To prevent the escape of this by evaporation they should be mulched by having some half rotten manure laid round them to shade the soil and prevent it from cracking open, which is invariably the case after frequent applications of water. Keep them free from blooms so as to concentrate the strength of the plants in forming fresh crowns, and induce them to make a vigorous growth, without which they will not flower freely when wanted. Treated in this way, they produce at least twice the quantity of bloom that can be got from them when confined to pots during the summer, independently of the saving of labour there is in watering and attending to them.

Spiræas.—These, like Callas, are half aquatic in their nature, and seldom get enough water if confined to pots; after they have done blooming, they should therefore be planted out and treated after the same manner as recommended for the latter. Before doing so, they should be divided, if it be desired to have them in the same sized pots again at the time of lifting, as the effects of any mutilation of the roots that must necessarily take place in so doing is more readily overcome now than when the plants are going to rest in the autumn. A little fresh rich soil filled in round the balls of the plants and made solid and firm, will be of the greatest assistance in inducing them to make fresh roots and strong, vigorous crowns, without which their capacity for blooming will be of the most limited kind. As soon as they get a start, manure water may be frequently given them with the most beneficial results, and a syringing or damping overhead is equally acceptable to them.—J. SHEPPARD, *Woolverstone Park.*

Orchids.

On hot days some difficulty will be experienced in keeping the temperature of the houses down to the prescribed limit, for, although a few degrees above the proper point in summer are not of much importance, it is best to keep as near as possible to the temperature recommended. Where the shading is so arranged that by running on fixed supports it does not rest on the glass, regulating the temperature is not so difficult, but where it lies flat on the glass, the heat is not easily kept down without giving too much air. In such cases I find it an excellent plan, on settled hot days in summer, to lift the roller after the blind has been let down, and place four (or more according to the length of the roof) blocks of wood, about 6 in. square, or 32-sized pots under it, so that a current of air may pass between the blind and the glass; of course this is not so good as fixed supports for the shading, nor is it practicable in all cases, but where it can be managed it is surprising what a difference it makes in the temperature of the house, which, although it may still be hot, has no longer a feeling of oppression about it; this simple arrangement is particularly beneficial to the cool-house Odontoglossums, their worst enemy being a dry heat. The houses should all be damped down three or four times a day, but the walks, unless they are furnished with trellis work, should not have puddles left in them, for nothing detracts more from the enjoyment of the flowers than to have to walk through water to look at them; the cold house, where circumstances may render it necessary to have water in the walk, should be supplied with a trellis in order that the plants may be visited without having to walk in the water. The watering must be regularly attended to each morning, and the syringe should be as carefully used as the watering-pot. Admit air freely and uniformly. The temperatures during July should be East India or warm house from 75° to 85° by day and 70° at night; that of the Cattleya or intermediate house from 70° to 80° by day and 65° at night; and that of the Odontoglossum or cool house from 60° to 70° by day and 55° at night; the higher day temperatures are for sun-heat. Those who have but one house should treat it as an intermediate house, and arrange the plants according to their respective requirements.—JAMES O'BRIEN.

Indoor Fruit Department.

Vines.—Late Grapes, intended for long keeping, should be thinned more freely than Grapes for present use, for bunches that become too crowded can never be kept successfully. They should be made thin enough to permit a free circulation of air around every berry. Such varieties as Lady Downes and Alicantes should be thinned as soon as set, otherwise the berries are apt to be injured, and the operation cannot be done so expeditiously; push them onwards, as their flavour will far exceed that of those ripened during the short, dull days. Wherever the berries are still green, keep up a good supply of moisture during bright weather, shutting up as early as can be done without overheating, and applying fresh air as daylight is diminishing. Examine borders where Vines are fully established, and prevent them from becoming dry. Where the berries have begun to colour, give the soil a thorough soaking and well mulch it with short manure, when no further watering will be necessary. The same directions apply to outside borders when dry. Increase the air when colouring takes place, and in dull weather prevent it from becoming sluggish, otherwise the flavour will be impaired; maintain a brisk night temperature, which may, however, be allowed to fall below 70° in the morning. Keep ripe Grapes cool and airy, and free from insects, otherwise the foliage will drop prematurely, and serious results will show themselves the following year. Before colouring takes place examine all bunches left too thick, and remove sufficient berries to prevent over-crowding. Encourage all young Vines planted this season; attend to them particularly in the way of water, syringing, and keeping the foliage clean. Allow them to carry a heavy leafage, and if not wanted for early forcing, let them grow as long as they will, provided they ripen thoroughly. Pot Vines, and others for early forcing, should not be allowed to make lateral growths; on the contrary, they should be strictly pinched, retaining the main leaves as long as possible. Shift on into 9-inch pots Vines for next year's planting; let the soil be of a sharp character, but not too rich, and the pots well drained.

Figs.—Prevent these from becoming dry, bearing in mind at the same time the condition of the crops; where the first fruits have been gathered, and the drainage good, let the trees be mulched and well saturated with manure water. Apply the syringe freely, and keep up a moist, warm atmosphere, in order to encourage the second swelling of the fruit. Plants in pots should be liberally watered with liquid manure, and top-dressed with rich materials.—J. HUNTER, *Lambton Castle.*

Kitchen Garden.

There is no such period as a "slack time" for the kitchen gardener; at least, I have not yet been able to discover it, for no sooner is one crop planted or sown than another requires thinning, another earthing and weeding, and another lifting or harvesting, in order that the ground may be again prepared for cropping. Such is now the case with Shallots and Garlic, which, in many instances, will be ready to be taken up; they should not be allowed to remain after the tops have died off, but pulled up and left on the ground a day or two to dry, and afterwards tied up in convenient bundles for use, and hung up in the vegetable shed or other airy, cool, dry room. The ground where they have been grown, if well dressed when they were planted, will not now require digging, but simply levelling and weeding, drawing drills afterwards for the sowing of Endive, or black-seeded Bath Cos Lettuce for early winter use. Potato ground from which the crop is now being lifted should be at once cropped (without digging) either with Snow's Winter Broccoli or Veitch's Autumn Giant Cauliflower. Some do not wait for the Potatoes being dug, but plant between the rows previously, a practice not to be recommended, as frequently both crops are injured thereby. I much prefer to prick out the Broccoli, &c., from the seed-bed temporarily, and plant them permanently as soon as the Potatoes are cleared. The earliest crops of Peas are now nearly over, and as soon as they can be got off the ground should be deeply dug, or forked over, and sown with Early Horn Carrots or Turnips; a good breadth of the latter should now be sown, and for this sowing Chirk Castle Black stone is the best kind. The best ground is generally devoted to Peas, and it is also invariably well dressed previous to sowing them; therefore if this be not required for Carrots or Turnips, it ought to be in good condition for Strawberry plants, which, if planted now, will produce a full crop of fruit next season. I never allow these to stand more than two seasons without renewals, therefore by-and-by, when the

ripe fruit has been gathered, all that are two years old will be cleared off, and the ground re-cropped with late Broccoli, Cottagers' Kale, or Coleworts. Ground that is now being cleared of Cauliflowers should be sprinkled with guano, and be deeply dug, when it will be in excellent order for the earliest supply of Winter Spinach; a first sowing of the prickly kind should be made within the next fortnight. A final sowing of French Beans should now be made, selecting a dry, warm, sheltered position for them, or they may get injured by frost when they are just beginning to pod. I have sown as late as the 20th of last month, and have had good crops, but as a rule it is not advisable to sow in the open ground after the first week in June. The same remarks apply to Peas, except that first early kinds may be sown as late as the third week of last month with a fair prospect of success, if treated liberally in the matter of mulching and watering, should the month of August prove to be dry and hot. Mildew is so frequently destructive to late Peas that every precaution should be taken to prevent its attacks, and for this purpose nothing is so effectual as sowing the Peas in trenches that have been as heavily manured as is usual for Celery. The main crop of Cabbages will now be in use, and when cutting them strip off the bottom leaves from the stumps in order that the sprouts now being formed may have room to develop themselves. The ground should be deeply stirred either with a fork or hoe, and if irrigation be possible let it be done; the sprouts often prove so valuable, and are certainly more tender than the heads, therefore a little labour in this direction is well bestowed. It will shortly be time to sow Cabbages for autumn planting. The spring-sown Onion ground is always reserved for our main crop of Cabbages, and as it is late before these can be got off, we seldom sow before the 1st of August, but where ground is plentiful sow at once. Atkins' Matchless and Hill's Dwarf are two of the best kinds. If it be thought desirable to preserve the stock of any good variety of vegetables, such as Cauliflowers, Lettuce, &c., select the most perfect types for seeding, and stake or otherwise mark them in order that they do not get cut when the crop is being used. No two kinds of Cabbages, Brussels Sprouts, or Cauliflowers, should ever be seeded together if the stock be desired pure, for bees are wonderful hybridists, but not particular as to how or on what they operate. The rains with which we have been favoured have marvellously advanced the growth of all crops, weeds included, and these on every favourable opportunity should be kept in check by hoeing or scratching the ground, even when no weeds are visible. Tomatoes are now growing freely, and will require to have their growths trained or tied in; if there be a tendency to strong growth, repress it by severe pinching of the lateral growth, an operation which also promotes fruitfulness. If the fruit set too thickly, thin it out, and remove all the large leaves that keep the light off it. As a rule, high feeding is not necessary for Tomatoes, but if bearing freely they may be assisted by an occasional watering with weak liquid manure. Several kinds of herbs will soon be ready for cutting and preserving in a dry state; Mint, Peppermint, Sage, Thyme, and Penny Royal are all now fit to cut, and should be tied up in small bunches and dried as quickly as possible, in order that they may retain their green colour. Small saladings, such as Mustard, Cress, Chervil, Radishes, and Onions all require assiduous attention, in order to keep up an unbroken supply in all gardens, large or small; it is well to give a man charge of this department, and make him responsible for the regular performance of its duties.—W. WILDSMITH, *Heckfield*.

Forest Trees and Underwood.

The past season has been one of the worst on record for bark peeling; however, it has been most favourable for drying and harvesting the bark, all of which has been secured in good condition. Underwood cut last season should have been cleared out of the copses ere this, and the tops of the felled trees should be tied up as faggots and removed as early as possible, in order that the growth on the underwood stools may not get broken down or otherwise injured. Where charcoal is required, the wood should now be carted to the place where it is intended to be burnt, and corded up, keeping it off the ground so as to induce drying; peeled Oak branches (if sufficient can be had) and Beech make the best and cleanest charcoal, especially the former. In recently-formed plantations, where there is a strong growth of Furze, Brambles, Bracken, &c., the trees should be liberated sufficiently to allow them room to develop themselves; where ground game is numerous, a moderate growth of rough vegetation round the necks of the plants is a source of protection against the destructive ravages of hares and rabbits, and n exposed situations a crop of undergrowth acts as a shelter during severe weather. Honeysuckle in plantations is very injurious to young trees, for in a season or two it climbs to the top of the leading shoot and entirely stops the circulation of sap and almost invariably kills the plant. Level in cart and other tracks on green rides caused by the haulage of timber and underwood; root out Thistles, Docks, and other objectionable weeds that are growing on Grassy verges and glades in view of carriage drives; trim off rank weed growth amongst shrubs and ornamental trees; foreshorten competing leaders or any side branches that are growing out of proportion on Conifers and ornamental deciduous trees. Any branches of trees that overhang roads and require foreshortening, should now have that operation performed, care being taken to leave sufficient foliage to keep the branch alive, and, if possible, sufficient to hide the mark occasioned by pruning; this may generally be effected by cutting off the branch close in front of twiggy sprays. Live branches should in no case be cut off close to the stem; but, on the other hand, dead limbs should be neatly sawn off close to the bole, and the wound tarred over, which will prevent Moss and Fungus growth, and in time the bark will grow over it. Any branches that have been damaged or broken by the falling of timber, should be cut off as far as the fracture extends. In the nursery, the destruction of weeds must not be neglected after the late copious rains, for they will now grow apace. Conifers should now be carefully examined to see that Pine beetles and their larvæ are not at work amongst the young shoots of the Pinus family. I have found this season that Hylurgus piniperda and a beetle larva are very numerous, chiefly on Scotch and Austrian Pines, some hundreds having been destroyed in the nursery this season; they are generally found in the leading shoots of the current season's growth.—GEORGE BERRY, *Longleat*.

Clematises free and pruned down.—In looking amongst Clematises on trellises, it will be observed that in some cases the growth is all at the top and is there too heavy, while below there is nothing but bare stems; in other cases the trellises are richly and uniformly clothed, the result being in the first case a somewhat ugly boss of leaf and flower, in the second an even sheet almost from the ground-line. All the robust and fast-running varieties should be periodically cut down either to within an inch or two of the ground, or to some height above the ground-line suitable to the particular circumstances. The result of cutting close down is the production of a number of strong shoots, which produce large leaves and fine flowers from the very base or from a little above it; whereas when the plants are allowed to run for years they form all their growth at the very summit of the trellis, and the main body of the perpendicular walls is altogether unclothed. The case is illustrated here at the present time in an interesting manner; some plants of Jackmani on a trellis have had their own way for seven years, and have got up 15 ft. and stretched away from the top of the trellis to shake hands with a Hornbeam, and now they have mixed with the Hornbeam and adorn it with glorious festoons, while the trellis itself, to which their stems are attached, is bare, save for the network of branches interwoven with it like a spider's web. Other plants in the front of a Fernhouse are clothed to the ground and form a beautiful sheet of leafage and flowers, the result simply of having been cut close back as soon as they began to appear leggy. For a general rule once in three years is often enough to cut them down, but a better rule is to cut when the operation is obviously necessary.—"Gardeners' Magazine."

Pacific Coast Plants.—In the February part of the "Proceedings of the American Academy," Mr. Sereno Watson gives us three articles, one on the Flora of Guadalupe—a small island off the coast of Lower California; another, a list of plants collected on the same island by Dr. Palmer; the third, descriptions of new plants, chiefly Californian. The last contains many things that cultivators will be anxious to see. There are three new Lupines, all blue-flowered. Four new species of Clover give Mr. Watson a chance to revise the whole of North American Trifoliums. He makes thirty-nine species in all. Sophora Arizonica and Parkinsonia Torreyana, should make, according to the "Gardeners' Monthly," valuable shrubs for the Southern States. The beautiful family of annuals, Mentzelia, receives a new addition in M. dispersa. A new Dogwood from California is Cornus Torreyi; it has loose cymes of white berries, with the stones curiously crowned with tubercles. Reference is also made to a curious Palm, with leaves as thready as the well-known Yucca filamentosa, and of which we have had specimens sent us by Mr. Rock and others. Mr. Watson says it is a Brahea, and introduced into cultivation as B. filamentosa. He describes two allied species——one from Guadalupe Island as B. edulis, the other, if a real Brahea, as B. armata, from 80 miles below San Diego. A Cypripedium collected by many botanists in past years, and near C. parviflorum, is now made C. occidentale. A small, white-flowered shrub from Southern Arizona, allied to Spiræa, is made Vauquelinia Torreyi. Guadalupe Island is 26 miles by 10 miles, and is 100 miles west of the coast of Lower California. One would suppose from its southern latitude that the plants would be of a tender character, corresponding

with that on the mainland, but a glance at the list shows a comparatively hardy class. But this is accounted for when we read that the island is in the midst of the current, which on that side flows down from the North seas; and this should make the flora of a somewhat similar character, as regards hardiness, to that of England, which receives the warmth of the northward flowing or Gulf stream; still the winters are not quite so severe as the English, and the summers are often hot and dry. The Palm, Brahea edulis, grows 40 ft. high.

REPORT OF THE SEWAGE CONFERENCE.

THE Chairman of the Conference, and the Executive Committee, after having considered the information furnished from the various localities, as well as the facts brought forward during the Conference, submit the following as the conclusions at which they have arrived:—1. In certain localities, where land at a reasonable price can be procured, with favourable natural gradients, with soil of a suitable quality, and in sufficient quantity, a sewage farm, if properly conducted, is apparently the best method of disposing of water-carried sewage. It is essential, however, to bear in mind that a profit should not be looked for by the locality establishing the sewage farm, and only a moderate one by the farmer. 2. With regard to the various processes based upon subsidence, precipitation, or filtration, it is evident that by some of them a sufficiently purified effluent can be produced for discharge, without injurious result, into water-courses and rivers of sufficient magnitude for its considerable dilution; and that for many towns, where land is not readily obtained at a moderate price, those particular processes afford the most suitable means of disposing of water-carried sewage. It appears further that the sludge, in a manurial point of view, is of low and uncertain commercial value; that the cost of its conversion into a valuable manure will preclude the attainment of any adequate return on the outlay and working expenses connected therewith, and that means must therefore be used for getting rid of it without reference to possible profit. 3. In towns where a water-carried system is employed, a rapid flow, thorough ventilation, a proper connection of the house drains and pipes with the sewers, and their arrangement and maintenance in an efficient condition, are absolutely essential as regards health; hitherto sufficient precautions have rarely been taken for efficiently ensuring all the foregoing conditions. 4. With regard to the various dry systems, where collection at short intervals is properly carried out, the result appears to be satisfactory, but no really profitable application of any one of them appears as yet to have been accomplished. 5. The old midden system, in populous districts, should be discontinued and prohibited by law. 6. Sufficient information was not brought forward at the Conference to enable the Committee to express an opinion in regard to any of the foreign systems. 7. It was conclusively shown that no one system for disposing of sewage could be adopted for universal use; that different localities require different methods, to suit their special peculiarities, and also that, as a rule, no profit can be derived at present from sewage utilization. 8. For health's sake, without consideration of commercial profit, sewage and excreta must be got rid of at any cost. The Executive Committee, whilst abstaining from submitting any extensive measures, recommend that the prevention of dangerous effects from sewage gases should receive the attention of the Legislature.—Signed by the Right Hon. James Stansfeld, M.P., Chairman of the Conference. Members of the Executive Committee: Lord Alfred S. Churchill, Chairman of the Council; F. A. Abel, F.R.S., President of the Chemical Society; Sir Henry Cole, K.C.B.; Captain Douglas Galton, R.E., C.B., F.R.S.; Lieut.-Col. E. F. Du Cane, R.E., C.B., Surveyor-General of Prisons.

THE LINDLEY LIBRARY.—It may not be generally known that this is a free public library, open alike to Fellows and non-Fellows of the Royal Horticultural Society. The rules framed by the trustees are couched in the most liberal spirit, it being their desire that the advantages of the library shall be as extensively enjoyed as circumstances will permit. A considerable number of persons, therefore, have availed themselves of the opportunities accorded them, under certain restrictions, of borrowing books; but the trustees would gladly see many more persons avail themselves of this privilege, and desire it to be known that this advantage is offered as freely to those who are not Fellows of the Royal Horticultural Society as to those who are members of that body. Among the circumstances which tend to check the due development and utility of the library may be mentioned:—The little knowledge that the horticultural public has of the advantages within its reach; the want of a proper room, exclusively devoted to the purposes of the library; the impossibility, with the present limited funds at the disposal of the trustees or of the society, of providing the sufficiently constant attendance of a qualified librarian, or of issuing a printed catalogue of the books, &c.; the scanty income of the library, amounting to only about £38 per annum—a sum inadequate for the purchase of horticultural and botanical books and periodicals, and for the expenses connected with the proper maintenance of the same. Since July, 1872, 260 volumes have been added to the library, at a cost of about £200. These were partly obtained by way of exchange, seventy-six volumes (which were either duplicates, or which were not needed for the purposes of the library) having been disposed of for £50 14s. 6d. The addition to the library, therefore, consists of about 200 volumes, costing about £150. This expenditure was in a great measure necessitated by the number of arrears of periodicals, which had been discontinued after the death of Dr. Lindley. The trustees have deemed it advisable to bring the matter before the horticultural public in the hope that by increasing the available funds, or by donations of books, memoirs, pamphlets, &c., the utility of the library as an independent means of promoting scientific and practical horticulture may be enhanced, and its benefits shared by a much larger number of persons than heretofore. Communications, books, &c., intended for the library should be addressed to Mr. W. B. Hemsley, Royal Horticultural Society, South Kensington.

LAW.

RIGHT TO REMOVE TREES CONFINED TO NURSERYMEN.—Recently, at a special sitting of the Darlington County Court, an action (Longthorne v. Raine) respecting the removal of trees, &c., was heard. Plaintiff sought to recover £50 damages for the removal and destruction of fruit trees. Plaintiff stated that he was a gardener at Neesham, and that he bought some property occupied by defendant, upon which there was a number of fruit trees. There were 500 full-grown Gooseberry trees on the land, which had been reduced to 420. Some of the Gooseberry trees had been cut off and stuck in the ground. In addition, there had been about 700 young Gooseberry trees and 60 Currant trees taken away, the latter being too old for proper removal. There had also been Raspberry trees, Plum trees, and Rhubarb roots taken away, while Strawberry roots had been dug up and turned over. Defendant had a cart on which he styled himself a "market gardener." Defendant sold spring trees, but not large trees. Defendant had agreed to let plaintiff have the trees, &c., at a valuation, but afterwards changed his mind. Several witnesses, gardeners, and others were called to prove the damage and to speak as to whether defendant was a nurseryman or gardener. Mr. Stevenson argued, on behalf of plaintiff, that no one but a nurseryman had a right to remove trees, and defendant was only a market gardener. Mr. Clayhills held that, as defendant was a market gardener, he held a right to remove the trees. The judge, however, held a different opinion, and gave a verdict for £45 and costs.

NOTES AND QUESTIONS—VARIOUS.

Canterbury Bells.—A large bed of this beautiful Campanula is now in bloom at the Bedfont Seed Grounds, near Hounslow. The colours of the flowers are many and varied, there being probably twenty or more diverse shades, and many of the blooms are semi-double, and even quite double. When cut they make beautiful nosegays.—B.

Papaver umbrosum.—Some flowers of this Poppy, sent to us by Mr. Thompson, of Ipswich, show it to be remarkably brilliant and effective, though now the blooms are inevitably smaller than earlier ones. The colour being a dazzling scarlet with a jet black blotch on each petal, a mass of it must be a grand sight. It is no doubt an annual, but seeds of it seem to require to be sown in the autumn. It grows about 2 ft. high, and has a habit like that of P. Rhœas. The striking black blotch, which is so conspicuous on both sides of the petals, is sometimes margined with ashy-grey on the inner face, but not by any means invariably so.

Apple Tree taken Possession of by a Rose.—In a field not far from Newland Church, Worcestershire, is a large Apple tree, the head of which was blown off some years ago, and the cavity in the centre has been taken possession of by a wild Rose, the roots of which, doubtless, reach the earth through the trunk. The Rose has formed a head 8 ft. or 9 ft. in diameter, which is at present covered with hundreds of lovely pink blossoms, and, being surrounded by a fringe of Apple branches covered with foliage, it has the appearance of a gigantic bouquet, the effect of which, viewed from a distance, is very striking. W. Cox, *Madresfield Court.*

Outbreak of Potato Disease.—On the 23rd inst. I observed, for the first time, unmistakable signs of this disease in a plantation consisting of the Rector of Woodstock, and notwithstanding the brilliant weather of the last few days it continues to spread. To-day (June 28th) I have found several plants affected in a piece of Early American Rose. Last season the disease was seen for the first time here on the 4th of July, and as this is a late season, there is reason to fear that the result may be even more disastrous than in any former year.—J. BELL, *Strathfieldsaye, Hants.*

Golden Elder.—I can confirm that all has been said in favour of this by "Forester" (see p. 608, Vol IX.). It is especially beautiful in early summer—not far behind, indeed, the Croton variegatum of our stoves. The variegated Elm is also a fine tree, owing to the silvery hue of its foliage.—J. M.

Bats.—Will some of your correspondents point out a way by which I can get rid of these? They infest the roof of my house in great numbers.—J. G.

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

A GARDEN OF SAXIFRAGES.

ON the 24th June, 1875, I gave a brief account of the gardens at Fettes Mount, which is situated about seven miles south-west of Edinburgh. On the 24th of June this year I again visited that establishment, and was delighted to find the Saxifrages, for which this place is celebrated, in their very best condition, particularly those belonging to the crustaceous section. There are here upwards of 150 species and varieties, of which about sixty, exclusive of duplicates, were counted in bloom at the time of my visit. The mixed rock garden banks described in my last notice (see "GARDEN" for July, 1875), have been in a rich condition early in spring, not only with Saxifrages, but with Aubrietias, Dwarf Phloxes, Campanulas, Veronicas, particularly V. rupestris and V. verbenacea, Sempervivums, and Sedums, all blended together in irregular patches of various sizes, and flowering at different times. An operation connected with the early-flowering Aubrietias, growing on the artificial sloping banks, is worthy of imitation: when the early flowers are partially past, the surfaces of the plants, particularly the old tufts, are clipped, new growths are immediately formed, which again flower, and in this way a succession is kept up during a considerable portion of the year, a remark particularly applicable to the variety known as Aubrietia grandiflora. At the present time (24th June), the Saxifrages at Fettes Mount present a most gorgeous effect, many of the tufts being large and covered with bloom. The portions of the rock garden devoted to the general collection are arranged in a series of long and elevated compartments, one immediately behind and above the other, the tallest species being planted nearest the back. The spaces are all furnished with sharp, soft, sandstone rock, mixed with loamy soil, which seems admirably suited for their growth. At the present time the pyramidal-growing sorts, particularly the species known as S. nepalensis, S. pyramidalis, also S. Cotyledon and its varieties, are all in excellent condition. Besides the specimens of the above, as exhibited in the general collection, a large number of duplicate Saxifrages may be seen flowering in all directions amongst the ordinary herbaceous plants, giving a quaint appearance to the grounds. The general aspect of the garden is on a slope, inclining to the south and east. In many places, the surface, as before stated, is raised into artificial banks, with walks winding among them. These artificial banks, in many instances, are covered with Saxifrages and other flowering plants, which now obliterate the original outline of the mounds. No attempt is made to keep these artificial banks in trim condition, their good appearance depending upon the care bestowed on the original planting by the judicious mixing of the species. It is true that some of the kinds outgrow others; still, a harmonious union in the colour of both flower and foliage is produced, and is infinitely more pleasing than single plants dotted about as herbaceous plants usually are. Of course, the general collection of Saxifrages, Sedums, Sempervivums, and the ordinary dwarf Alpine collections, are kept in regular order in places arranged for them, all being separated by numerous stone compartments or pockets. In what may be called the wild garden, consisting of mixed sloping mounds, the seed-stalks of the early Saxifrages, particularly those of the S. muscoides section, are clipped as soon as the flowering is over, and the masses of rich green tufty foliage contrast well with the later-flowering species, both crustaceous and others, as well as with the other dwarf plants previously named. In this way an interest is kept up on the artificial rocky sloping banks or walls for a great part of the year. There is much of general interest always to be seen at Fettes Mount, but I must say that of all the collections of Saxifrages visited by me in the three kingdoms, none possesses the interest of those seen at this place. The proprietor, Mr. Potts, has himself collected on the Swiss Alps many of the species which he now cultivates. His chief aim is to arrange them in groups after the manner in which he has been accustomed to see them in their native habitats; and in this attempt he has been to some extent successful, though not to the extent he could have desired. Still the arrangement is pleasing, and well worthy of imitation by all lovers of Saxifrages and Alpine scenery.

Royal Botanic Garden, Edinburgh. JAMES M'NAB.

WATERING ORCHIDS.

THERE can be no doubt that the health of all Orchids depends in a great measure on the supply of water which they get, its quality, and the time and manner in which it is given; rain-water is generally admitted to be best, particularly for epiphytal Orchids. Those who reside in the country can have no excuse for watering their Orchids with spring-water, a plentiful supply of the other being always obtainable; but in the neighbourhood of large manufacturing towns where Orchids are extensively grown, the air is often charged with noxious gases, which render rain-water impure; nevertheless the benefits to be derived from its use are so great that a little trouble should be taken to save it, even if the supply obtained be small, for it would at least afford a change to the plants, and to some extent obviate the formation of that white-looking incrustation which generally covers both leaves and pseudo-bulbs when nothing but spring-water is used. This incrustation, by stopping up the pores, prevents the plants from deriving the sustenance which they otherwise would. Another argument in favour of rain-water, and one which I believe to be correct, is mentioned by Mr. Bateman in his work on the "Orchidaceæ of Mexico and Guatemala." In this he remarks that plants watered exclusively with rain-water are least liable to be infested with small snails, which are so mischievous to Orchids. Every Orchid-house, therefore, should be furnished with a tank of slate or cemented brick large enough to admit of the storing of a quantity of water, and thus allow any impurities with which it may be impregnated to settle to the bottom before the water is wanted for use. If the water collected from the roof be not sufficient, gutters should be placed round the adjacent buildings, and pipes laid from them to the tank, in order to insure a good supply. In cases where the tanks are small, in time of drought the water so collected should be used exclusively for the plants, and that required for damping the floors and for similar purposes should be procured from some other source. In order to obtain water as clean as possible, it is a good plan to stop up the pipe which conveys the rain-water into the tank after a dry time of any duration, so that the first good shower may wash the dirt off the roof and run down on the outside of the house instead of into the tank, after which the pipe should be unstopped, and the air being cleared and the roof cleaner, the supply of water then obtained will be of better quality than it otherwise would be; by this means, and by frequently cleaning out the gutters and the tank whenever the water in it gets very low, the objection to rain-water in towns will, in a great measure, vanish. But as the supply of rain-water is uncertain, particularly in the summer time when a quantity is required, a pipe should be laid on from the water-main to each tank where practicable, in order that in time of drought the rain-water may be eked out by mixing it with that from this source, or that it may take its place, should the supply of rain-water altogether fail. Some are under the impression that it is necessary to have hot-water pipes running through the tanks in the Orchid-houses, in order to warm the water before giving it to the plants; but in the cool Odontoglossum-house and Cattleya-house this is altogether unnecessary. If the water have been in the house for any length of time, it will be found to be quite warm enough without being heated by means of pipes, and the tanks may even be sunk under the floor. In the East Indian house, however, where a higher temperature is maintained, the difference between the temperature of the house and that of the water in the tank is greater than is desirable, and in that case it is better to have the tank for rain-water under the middle stage, its base being level with or just below the floor of the house, the top or cover being the

open work on which the plants are set. A 2-in. branch-pipe, which does not interfere with the working of the ordinary piping, should be run round the tank as near to the bottom as possible, to increase the temperature of the water. This branch-pipe should be fitted with a valve at the outside of the tank on the flow-pipe, to afford means of regulating the temperature of the water to from 75° to 85°. Under such conditions the evaporation from the water, which is so beneficial to plants in growth, could be regulated or altogether withheld when the majority of the plants in the house were at rest.

Pond-water ranks next to rain-water, but this should never be used direct from the pond; from whatever source water may be obtained, it is highly important that it should be stored in tanks in the Orchid-house for some time before it is used. As a rule Orchids require most water in spring and summer, and least in autumn and winter; but as there are many exceptions to this rule something more definite is necessary, and the best guide is furnished by the plants themselves; the amateur should endeavour to make himself acquainted with the proper growing season of each of his plants, and on indications being given of its approach, if the plant require it, it should be potted, and shortly after that an increased but still limited supply of water and slightly higher temperature should be given, until it is seen to be growing vigorously, when it should be treated to its proper growing temperature and a liberal allowance of water; the undecided manner in which Orchids in active growth are sometimes supplied with water—having a little given them each day, thus keeping them in a neither wet nor dry condition—is frequently the cause of the plants making stunted growth altogether unfit for the production of flowers. Such growth, owing to its not receiving its proper supply of water, is not completed in proper time, and the plants under such treatment become smaller every year until they are altogether lost. This is more especially the case with plants grown on baskets or on blocks; for, if stinted as regards water during the growing season, the little which they receive evaporates during the heat of the day, and the old pseudo-bulbs, instead of assisting in the formation of new growth, become shrivelled themselves and often infested with insects; when, therefore, a growing Orchid is watered a plentiful supply should be given it—enough even to run through the pot or basket, and, although the plant should be inspected each day, no more should be given until it appears to be getting dry, when it should again be thoroughly watered. It is easy for the most inexperienced to see when pseudo-bulbous Orchids are growing, or when they have finished their growth, but with Vandas, Aerides, Saccolabiums, &c., having simple stems, it is not so obvious whether they are growing or resting, and consequently a knowledge of the proper growing season of each will be of great assistance to the cultivator; when, however, plants of this class are seen to be pushing up new leaves from the middle, it may be known that they require a reasonable supply of water; and when the last made leaf has attained the size of the others, and there is no evidence of more coming, the resting season may be known to have arrived, and the supply of water should be considerably diminished. East Indian Orchids generally rejoice in a humid atmosphere, and do not require a large supply of water at the roots even during the growing season; and during the season of rest the temperature should be lowered, and the supply of water almost stopped. The new Grenada Odontoglossums, Masdevallias, &c., from a high elevation, should be liberally supplied with water while making their growth, and carefully watered from time to time even throughout the winter, in order to keep them plump. The Mexican and Guatemala Odontoglossums partake greatly of the nature of Oncidiums, and should be placed in an intermediate house, and treated to a plentiful supply of water while making their growth, and afterwards kept dry in a cooler temperature until the time has arrived for their growing again. The Cypripediums, Calanthes of the C. veratrifolia class, and other evergreen terrestrial Orchids grow nearly all the year round, and should have a liberal supply of water, except for a short period just before the flowering time, when they should be kept drier. Cattleyas, Lælias, and Oncidiums, do not like to be overdone with water at any time, but sufficient must be given them to enable them to perfect their growth in the allotted time; they require a distinct period of rest, and during that time the temperature must be lowered, and the supply of water altogether withheld, unless the plants seem to suffer from want of it. With small-growing Orchids, such as Burlingtonias, Comparettias, and Ionopsis, which should always be grown on blocks or rafts, it is better to err in giving a little too much water than too little. These plants have but little substance in them, and if they do not receive a sufficiency of water, unless they are in a very accurately adjusted temperature, they are likely to become shrivelled beyond recovery. During the summer months Orchids should be looked over, and those requiring it watered with the spouted pot at 6 a.m., in order that the plants may slowly imbibe enough in the cooler part of the morning to carry them through the rest of the day, with the assistance of moisture rising from the stages and floors. In autumn and spring the watering should be done about 9 a.m., and in winter just before noon; but during this time great care is required in watering, and water should on no account be given to a deciduous plant at rest, unless it seems to be shrivelling.

With respect to the use of the syringe in Orchid-houses, I am convinced that if evidence could be taken for and against it, the balance would certainly be against it as generally used. It is by no means a rare occurrence to see a house of Orchids being indiscriminately syringed in the middle of the day, the drip from the baskets and blocks falling into the hearts of the plants below them, an occurrence which cannot fail to do harm. The free use of the syringe may seem to do good by counteracting the ill-effects of an over-heated and ill-ventilated house, but it only staves off the evil day, which ultimately is sure to arrive when the plants become spotted or diseased. It is better to make the heating and ventilation perfect, and to restrict the operations of the syringe as much as possible, using it only on the more robust-growing plants, and to moisten the back wall and surfaces under the stages. During the growing season, the syringe may also be employed on the lower portions of such plants as Vandas, Aerides, &c., but never indiscriminately. In syringing, the cultivator should stand well above the plants on an inverted flower-pot, or set of short steps, placed in the passage, and syringe each plant by itself, moving the flower-pot or other support along as may be required, and taking care that the water does not get into the hearts of the young growth; he should never syringe a plant suspended over others; rather take it down, dip it in water, and, after allowing it to drain, replace it. If these instructions be attended to, they will be the means of saving the leading growth and consequently the flower-spike of many a valuable Orchid. If water be accidentally dropped into ay oung growth while watering, it should at once be removed by means of a piece of sponge.

JAMES O'BRIEN.

Phlox Drummondi splendens grandiflora.—This fine Phlox is well worth the attention of all who admire lovely flowers. In pots or in the open ground it is equally effective, but I specially recommend it as a decorative pot-plant, as from the time when it begins to flower in the middle of June until the end of October it is never out of bloom. Its flowers are perfect in form, and of an intense, rich, crimson-red hue, with a prominent white eye; the habit of the plant is robust and branching, and it is admirably adapted for cutting from without injury. Seed of it should be sown in pans in a cool-house early in April, and when large enough the young plants should be pricked out into other pans or boxes, until sufficiently strong to be transferred with a ball of soil attached to them into pots. Four good plants are enough for a 6-inch pot, which they will fill thoroughly. Heat should be avoided as much as possible, but they like plenty of light and air.—A. D.

Desfontainea spinosa.—This fine shrub, which survives out-of-doors in the milder districts only, is well worthy of a place in the cool greenhouse or conservatory. It is, by the way, a curious fact that not a few fine subjects hardy, or supposed to be hardy or nearly hardy in the south of England, are seldom accorded the protection of a greenhouse. The Desfontainea is a case in point. It is surely as well worthy a place as many New Holland plants.—V.

Kalosanthes versicolor.—We saw on Thursday morning a batch of this fine plant in Covent Garden, grown by Mr. Brown, of Hendon. Its flesh-coloured flowers are very distinct, and from that alone desirable as a variety where the scarlet kind is grown. The plant is, however, well worthy of culture for its own sake, as the delicate and varying hues of the flowers are very beautiful.—S.

A NEW SEEDLING FERN.

(PTERIS SERRULATA LEYI).

Numerous varieties of the Chinese Pteris serrulata are grown in gardens, but among these none are more interesting than the one which we now figure, and which indeed, owing to its partially winged petioles, seems more nearly related to the variety known as P. luxuriosa, a native of Manilla, than to the typical Chinese plant. It is singular to find that, while many forms of this Pteris are crested or have broad, tassel-like terminations to their fronds, the beauty of the present variety consists in the pinnæ being suddenly contracted into slender, serrate tails, as shown in our engraving. Small plants of this

Pteris serrulata Leyi.

variety have been exhibited at the London and other shows during the present season by its raiser, Mr. J. Ley, of the Exotic Nursery, Croydon, and it deserves culture as a distinct form of one of the most generally useful of all decorative Ferns. B.

A HISTORY OF THE RHODODENDRON.

Mr. Leo Grindon has lately written a very interesting essay on the history of the Rhododendron, which well shows the fruits of intelligent hybridising in gardens, and the wealth of beauty possessed by this noble family of plants. Literally, Rhododendron signifies "rose-tree," the old Greek word *rhodon*, usually translated "rose," having denoted fine red flowers in general, the genuine Rose and the Pomegranate blossom included. The ancients were not so exact as ourselves in botanical and floral discrimination: they were at all events more economical in the employment of their plant names, and often made a single term do duty for a dozen different things. The practice survives to some extent even into the critical times we call our own; for in the country we may hear the scarlet Corn Poppy called the Gipsy Rose, and a certain magnificent crimson Hibiscus is by gardeners called Rosa sinensis, or the China Rose. The second half of the word, *dendron*, with the ancient Greeks denoted primarily a tree, a tree of any description, and in a more extended sense, a shrub or ligneous plant—a practice likewise continued by ourselves in such names as the Tree Peony and the Tree Mallow. The compound term Rhododendron was first applied to the Oleander, that splendid Levantine shrub, which has leaves like those of the Almond tree, only firm, leathery, and evergreen, and bunches of large pink flowers at the end of every branchlet. The foliage of the Oleander being in some degree Laurel-like, in course of time this showy plant came to be designated the Rose-bay, which name was passed on, in turn, to the purple Rhododendron, and is retained for it in Loudon's "Arboretum." There is no reason to believe that the original application covered anything besides the Oleander. It appears certain that no member of the modern genus Rhododendron was even so much as noticed by the ancients, unless possibly some attention may have been attracted to the plant familiarly known as the Yellow Azalea, which in reality is a Rhododendron, allusion being made to the deleterious effects of the honey, in the famous account given by Xenophon of the homeward march of the 10,000 Greeks, say about four centuries B.C. During the whole of the long period which elapsed between the time of Pliny and that of Elizabeth, Rhododendron meant nothing more. But with the restoration of learning and the birth of modern science came a change. In the famous old "History of Plants," compiled by Cæsalpinus, and published at Florence in 1583, it was extended to those lovely little denizens of the Swiss mountains which still go by the name of the Alpine Rose, the Rhododendron ferrugineum and the Rhododendron hirsutum of Linnæus, who, though he made so many changes, often ruthless, in the nomenclature employed by his predecessors, in this case allowed the name to stand. Under the influence of the great Swede, everything in the way of nomenclature was rendered more exact, and in the middle of the eighteenth century Rhododendron became limited to the plants so called at the present moment. It is interesting to look back upon the little Alpine Roses, and to think in how small a rill commenced the fame which now pertains to the queen of flowering shrubs. They are scarcely more than a foot high, somewhat harsh and rude in foliage, but delicious in the plenty of their scarlet or crimson flowers. The R. hirsutum, the flowers of which are dotted with amber, was cultivated at Lambeth by the celebrated John Tradescant as early as 1656. Both are now very common in English gardens, though lost beneath the shadow of their splendid kindred. Upon the Alps these two little shrubs attain the highest elevation above the sea-level which in Europe is reached by any thing ligneous, and help, like the deep blue Gentians, to "make glad the solitary place."

About 120 years ago the favourite old R. ponticum seems to have begun to attract the attention of gardeners. It is said to have been first cultivated in the neighbourhood of Gibraltar, and to have been introduced thence in 1763, though derived originally from South-western Asia. The province it there occupies extends from the shores of the Black Sea, through Armenia, to the western frontier of Persia. R. ponticum is the well-known old purple Rhododendron, the plant so often found embellishing sylvan grounds that were laid out sixty or seventy years ago. How effective it becomes at Alton Towers, where, viewed across the valley, the flowers seem a delicate lilac serf tossed up by the waves of distant verdure, is known to every one who at midsummer has made acquaintance with that charming place. In the course of the eighteenth century several species were transmitted from North America. The first there discovered appears to have been R. maximum, a native of Pennsylvania, and which, attaining in the wild state the height of 16 ft., was innocently supposed to be the largest of the race. It is readily distinguished from R. ponticum by the under-surface of the leaves being rusty, and by the comparatively pale green of the entire plant. Next came R. punctatum, the leaves of which are curiously dotted underneath, and which was introduced from Carolina towards 1785, and after this followed the R. catawbiense, so named because especially abundant near the source of the River Catawba, a stream flowing at the base of the Alleghanies, though plentiful also on

the mountains of Virginia. The height attained by this one seldom exceeds 4 ft.; it is remarkably hardy and robust in constitution; the leaves are shortly oval, rounded at the base, and glabrous. In England, after 1809, R. catawbiense which in flowers does not differ materially from R. ponticum, soon became, like the latter, extremely common. Concurrently with the acquisition of the American Rhododendrons, there were discovered, chiefly in company with them, many species of the beautiful genera Ledum, Andromeda, Kalmia, and Gaultheria, and of the section of Rhododendron, which, being originally distinguished as a genus under the name of Azalea, still possesses that name in everyday converse. All were conveyed to England, where they immediately became popular, and gave quite a new complexion to the flower garden. For a very long period it was customary to grow these various shrubs in borders by themselves; they demanded similar soil, and bloomed mostly at the same season of the year. Hence they acquired, very naturally, the collective name of American plants, a term still in use, but in 1876 applying so badly, as will presently be seen, that it conveys quite a wrong idea, and would be better dismissed. Discoveries even more splendid were now being made in the East. In 1796, during a tour in Northern India, Captain Hardwicke found upon the mountains which constitute the Sewalic chain—a tract separating the plains of Hindostan from the Himalayas, between 75° and 85° east longitude—a Rhododendron, excelling anything that had ever been imagined, the flowers of a most gorgeous crimson, and which, from its magnitude and lofty stature, 20 ft. to 30 ft. or more, was shortly afterwards named arboreum. Drawings of it were published in the botanical books of the day, but it was only just before the date of Waterloo that the plant itself became a living inmate of our island, seeds having been sent by Dr. Wallich to the Liverpool Botanic Garden, then under the care of the late celebrated Mr. Shepherd, and located in what is now the centre of the town. This glorious plant, the Rhododendron arboreum, like most of its genus, is an Evergreen. On its native mountains it is generally associated with forests of Oak, growing in turfy peat, on a stony bed, and covering vast tracts of country. The large, long, thick, and leathery leaves are underneath of a silvery white. The dazzling flowers grow in close and nearly globular clusters, terminating the boughs, and appear in March and April. In the centre of the great conservatory at South Kensington there is a plant of this stately species, probably one of the very first raised in England, now upwards of 20 ft. in height, and usually loaded every spring with splendid trusses of the refulgent bloom, the colour of which is that of arterial blood. A white variety was discovered in Nepaul in 1803 at an elevation of 10,000 ft. above the sea-level, and subsequently another with rose-coloured flowers. In these the leaves are less silvery underneath, but the stature and dimensions exceed those of the red-flowered form.

Coming from a mountain-height so considerable, it was hoped that R. arboreum would stand the English winter out-of-doors, and thus realise what had now become a fervent desire—a hardy crimson Rhododendron. But after three or four years' trial, it became only too evident that this glorious plant could not exist permanently, except with the protection of glass. The introduction of it marked an era, nevertheless, in the annals not only of the Rhododendron, but of English floriculture—the rearing of this splendid production of nature was the "herald-voice" of all the charms that pertain to the Rhododendron as now exhibited. What could not be accomplished by acclimatization was achieved by the art of hybridizing.

In the case of the Rhododendron, crossing appears to have been first tried with some of the American species above-mentioned and the R. ponticum; also with R. ponticum and the yellow Azalea. When it became clear that the crimson Arboreum was too tender for the open air, a happy thought conceived that its brilliant colour might be associated, by crossing, with the hardiness, and at the same time with the smaller dimensions of the old-accustomed kinds. Many zealous cultivators set to work, commencing in 1826, or just half-a-century ago. The pollen of the hardy kinds was placed upon the pistils of R. arboreum, and the hardy species were fertilized with the pollen of the Indian one. The hybrids raised from seeds yielded by plants of fertilized R. arboreum were by no means quite hardy; neither were the colours so bright as had been expected. Contrariwise, those which had been got by fertilizing the hardy kinds with R. arboreum pollen were eminently successful, and three distinct races were soon in cultivation. R. arboreum pollen applied to the pistils of the Catawbiense gave the splendid progeny which led off with the R. Altaclerense, so named because raised at Highclere, near Newbury, Hampshire, virtually by the hands of Lord Carnarvon, the second Earl, and one of the most enlightened florists of the time. R. arboreum pollen applied to R. ponticum gave the charming set of which the R. Cunninghami is the most noted; and when the mother-plant was a hardy species which we have not previously mentioned—the little half-procumbent R. caucasicum, which had been introduced from the Caucasus in 1803—there was produced a grand series, of which the best representative was the R. Nobleanum. R. caucasicum flowers abundantly in the open garden as early as January, and the hybrids derived from it are often seen in bloom at the same very early season of the year. In this way, accordingly, the old original desire of a hardy crimson Rhododendron at length became realized, and along with the colour arrived other excellent conditions. The vigour of the robust but comparatively poor in tint, the strong, the brilliant, all became reciprocally associated with agreeable supplement of improved foliage, where previously it had been poor, and of change of crowded clusters into gracefully expanded ones. On the Himalayas the foliage of R. arboreum is often scanty, and the plants when out of blossom not unfrequently present a lean and gloomy appearance. The work has been accomplished almost entirely in England, though in Belgium there has also been a considerable success. In any case these beautiful hybrids are all emphatically European, and in quite a preponderating degree purely English. Writing down the name of the great transatlantic State, one cannot but pause a moment on the very interesting reflection that the hybridizing has been practised, not upon the plants of a single clime or country, but upon the plants from the remote east and the far west, Asia and America being united in the progeny. The conjunction in these hybrid Rhododendrons of the products of both hemispheres is one of the largest and most significant facts in modern gardening; it shows in the most pleasing manner how floriculture, the first and finest of the fine arts, the most benevolent and the most civilizing, literally helps to make the whole world kin.

While the developments above described were in progress, Dr. Hooker, the present Director of the Royal Gardens at Kew, made the visit to the mountains of Northern India which, commencing in the autumn of 1847, is described so delightfully in the Himalayan journals. During his explorations he discovered nearly forty new species of Rhododendron, drawings and descriptions of thirty-one of which were afterwards published under the title of "The Rhododendrons of the Sikkim Himalaya." Among them were many wonderful species, including trees 40 ft. high, pretty little trailers, epiphytes, plants with huge leaves covered below (as in R. Falconeri) with brown wool, or bearing immense flowers shaped like bells, occasionally, as in R. Maddeni, exhaling powerful odour, or united in heads so grand as to measure 18 in. across. Producing seed freely (no plants, indeed, are more fecund than the Rhododendron)—seed, moreover, that keeps sound for a very long time—most of these new species have by degrees been raised in England, and are now to be found in good collections of exotics. The first to produce its flowers was R. ciliatum, a beautiful little plant, apt to deck itself with rosy bloom when only 6 in. high, and which never grows taller than a child. It flowers abundantly in the open air, as do likewise R. glaucum and R. anthopogon, Alpine forms somewhat similar to R. hirsutum of the Alps. The smallest found by Dr. Hooker was an elegant miniature, to which he gave the name of R. pumilum, a Rhododendron rooting among Moss, growing only 3 in. or 4 in. high, and bearing pretty cup-like flowers on long peduncles. It is worthy of remark that this little Indian fairy among the Rhododendrons has a counterpart in the Rhododendron chamæcistus of the Alps. The most charming of all Dr. Hooker considered to be R. campylocarpum, the flowers of which, borne on a bush about 6 ft.

high, are of a pure and spotless primrose colour. R. nivale he describes as the produce of the loftiest elevation upon the surface of the globe, growing at the height of 18,000 ft. above the level of the sea, far above the usual limit of flowering plants—so wonderfully fluent is the Rhododendron in its multiform species and modes of life. Many other species of this splendid genus have been introduced of late years, some from Bhotan, by Nuttall, others from the warmer parts of Asia, comprising lovely plants of wholly unprecedented figure and hues, such as R. jasminiflorum of Malacca, the snow-white flowers of which resemble those of the Stephanotis, and the bright orange or golden-yellow Javanicum. So far as practicable, crossing has been attempted between the Hookerian plants and the older sorts. Crossing has likewise been practised very extensively among the original hybrids, and is renewed every season, the bees assisting. Hence the number of sorts in cultivation, all the best of which have received names, is now beyond the counting, and the catalogue will soon compare with that of the most cherished kinds of Rose. To the list of Rhododendrons proper must be added that of all the shrubs called Azaleas, the distinctive characters of which, though well marked in the case of the extremes, in the intermediate forms insensibly disappear.

Hybrids illustrate much more than the simple or primitive forms of plants. Beautiful as a plant may become when doing its best *per se*, and under the stimulus of high culture, in these we see Nature constrained to take yet another leap, transcending even the choice designs she set out with in the beginning. Our hybridisers, thanks to their ingenuity and perseverance, not only bring into the world, day by day, more flowers than ever were before, but, as pointed out above, they positively create new kinds, or such as, save for human skill and patience, would probably never have existed. Where once there stood only a solitary old R. ponticum, now may be seen a score of these matchless hybrids, the colour no longer limited to purple, but reminding us, in its versatility, of the Auricula and the Hyacinth, the range being from pure white, through peach and cherry-rose, up to inexpressible carmine. Blue alone, as in Roses and Ericas, is wanting. Strange that Nature, usually so lavish, should, in respect of blue, be so parsimonious. Pure yellow also is wanting for the present, but this will be got by-and-by, several species possessing it. Not the least attractive feature in the colouring of the hybrids is the variety in the spots, which ranges from green to the intensest purple. The time will doubtless arrive also when, by crossing with some of the scented Himalayans, there will arise a new race of hardy fragrant Rhododendrons.

Edgings and Walks in the Kitchen Garden.—A correspondent of The Garden, writing lately on kitchen garden management, lays great stress on the making and keeping in perfect order of the Box edgings in that department, and to his remarks the editor appends the following pertinent observations:—"We doubt if a formidable series of walk edgings, &c., be necessary in the kitchen garden at all. They are costly to form and troublesome to keep. In the best cultivated gardens we have ever seen the only walks are alleys between well-grown crops." A good many gardeners will, we imagine, concur in this view of the case. Of course, with those who insist upon their kitchen gardens being kept as trim and as gay as their pleasure grounds, we have no fault to find; but we know that miles of Box or other kept edgings round the vegetable quarters mean an extravagant waste of time and labour, which could in a majority of cases be spent with great advantage on the legitimate work of a kitchen garden. We come in contact very frequently with owners of large gardens, and our experience is that of the majority them begrudge the expenditure their gardens entail, and would gladly reduce the expense of keeping and management if they could do so without curtailing the real usefulness of any department. One nobleman assured us not long ago that he could supply his establishment with both vegetables and fruit from the market at less cost than he could from his own garden; and we believed him, for nearly half the expense went in keeping and dressing the walks and borders, &c. This is not as it should be, however, and is not true of many kitchen and fruit gardens. It is always pleasing and satisfactory to see the pleasure grounds well cared for, and the walks in good order; but in a kitchen garden, if the object be simply to supply the establishment with vegetables and fruit, no more shold be expected than well-cultivated quarters and ordinary tidiness.—"The Gardener."

NOTES OF THE WEEK.

Annual Flowers as Carpeting Plants.—In the gardens of the Thames Embankment the earth in the recently-formed shrubberies is hidden by Mignonette, Virginian Stock, and other small annuals, a very good practice. By varying the annuals so as to have a different mixture or plant on the surface of each clump or belt, a refreshing change is the result.

Foxgloves in Kensington Gardens.—We have lately noticed a pleasing distant effect afforded by numerous spikes of variously-coloured Foxgloves growing in the open spaces in a plantation of low shrubs n Kensington Gardens. As the Foxglove is only one of a thousand subjects equally suitable for decoration of that kind, we hope to see such fine and easily-obtained effects more frequently.

Large Asparagus.—Mr. Horseman informs us that the finest bundle of English grown Asparagus which he ever saw was exhibited the other day at the Colchester Flower Show. It was grown by Mr. Harwood, a market gardener in that town. It consisted of 100 heads, and weighed 15 lbs. The same cultivator, it is said, exhibited last season a bundle weighing 18 lbs., in both cases taking first prizes.

Propagating Variegated Pelargoniums.—These are now being propagated in abundance in the London nurseries in the open air and in the full sun. In this, at all events, we have made a step towards simplicity in propagation.

The Moccasin-flower for Indoor Decoration.—We find that this Orchid lasts a long time in water in the sitting-room. As yet it is not, as a rule, plentiful enough to spare many blooms for this purpose, but we hope it soon will be.

The Royal Botanic Evening Fete.—This passed off with its usual success, and with favourable though somewhat threatening weather. It is to be regretted that such an opportunity for the holding of a good flower show at night is lost sight of. We imagine the effect of a rich collection of plants would be very striking by artificial light. The few graceful table decorations, baskets, &c., are not objects enough in themselves for such an occasion. The Society will probably find that ill-smelling oil lamps and burning of powder and other compounds in the shape of Bengal lights, are not in themselves sufficient to permanently attract the people whose patronage it desires to secure.

Cultivated Vegetables in America.—The "Bulletin of the Torrey Botanical Club" contains a communication from Dr. Trumbull in reference to the evidence of the existence of certain vegetables in America at the time of the first visit of the whites. He quotes from Cabeça de Vaca, who found in 1528, near Tampa Bay, Maize, Beans, and Pumpkins. Cartier, in his first visit to Canada in 1534, found Beans and Melons. Hudson, in 1609, when off the Catskills, was supplied with Indian Corn, Pumpkins, and Tobacco. Champlain, on his voyage in 1604, found Beans, Melons, and Tobacco on the Connecticut River. Purslane is also given as a substance known to the Indians in the earliest days.

The Pelargonium Society.—The attendance of the members of the Pelargonium Society is particularly requested at the second annual meeting, which has been convened to be held in the Council-room of the Royal Horticultural Society, South Kensington, on Wednesday, July 19, at half-past three, for the purpose of submitting the financial report for the past, and electing a Committee and officers for the ensuing, year; and for the transaction of other business. The Society's show, pursuant to previous notice, will be held on Wednesday and Thursday, the 19th and 20th inst., at South Kensington, in conjunction with that of the Royal Horticultural Society, when it is hoped that all the members of the Society who can will exhibit for competition or otherwise. The collection of Zonal Pelargoniums grown at the Chiswick Gardens on behalf of this Society includes many new varieties contributed by the leading Continental raisers; and being well worthy of inspection, it is proposed to hold a meeting for that purpose at Chiswick on a day to be fixed at the annual meeting, and this, it has been thought, would afford a good opportunity for the members to dine together.

College Gardens, Dublin.—Mr. John McKenzie, formerly of the Viceregal Gardens, Dublin, and previous to that at Drumlanrig, has been appointed curator of the College Botanic Gardens, Dublin.

Trial of Onions Autumn-sown.—There is another interesting trial of Onions at Chiswick this year, all the varieties being autumn-sown, as well as the few usually sown at that season in gardens.

Large American Grape-Vine.—The stem of the great Santa Barbara Grape-Vine attracts the attention of many visitors at the Centennial. It is about 18 in. in diameter at the largest point, and nearly as large elsewhere, a portion of the roots and branches being left on the Vine.

A NOBLE AVENUE OF TREES.

WE at one time supposed that European countries contained the most remarkable avenues anywhere to be found, but the following note sent us by Mr. Thomas Hogg, who has just returned from Japan, tells of a marvellous avenue which the writer has recently visited. Mr. Hogg, we may add, has spent a long time in Japan, and is well acquainted with its trees; and our gardens are indebted to him for many good plants:—"In the course of recent wanderings through the interior of Japan I have felt how little known are the natural beauties of that interesting country—its mountains, lakes, streams, and forests. The interior is a series of mountain ranges approaching the coast at various places, the most conspicuous point being Fusi Yama, or properly translated, Fusi Mountain, which rises immediately from the coast about 50 miles from Yokohama. From Fusi the range trends inwards, encompassing the large and fertile plain surrounding Yedo (or Tokio, as it is now called). On the northerly side of this plain, between 80 and 90 miles from Yedo, is a group of mountains, one of which is named Nikko, celebrated as the burial-place of Iyeyas, one of Japan's greatest rulers. A portion of the road thither, to which I wish to call attention, is one of the grandest sights that ever met my view in the course of my wanderings in any country. Approaching the town of Utsonomiya, 60 miles from Yedo, one is struck with admiration of the beautiful Pines and Retinosporas that line the road on either side, forming an avenue miles in length, with here and there an interruption wherever there is a road-side village. Leaving the town of Utsonomiya, the road to Nikko turns off from the main road, that runs through the country, and then begins an avenue of Cryptomerias, that extends for a distance of twenty-five miles or more. To fully describe its wondrous beauty is impossible. Planted where they are now standing for hundreds of years, they have attained a height of, I should judge on an average, 120 ft., and many have a diameter of 6 ft. to 8 ft. In the full vigour of health their massive tops mingle with each other, shading the road so much in some places, that the rays of the sun cannot penetrate sufficiently to dry up its bed for many days in the spring of the year or after heavy rains. The road, or more properly avenue, is not straight the entire distance, but has many windings, and these enhance its beauty. The whole has apparently been planted as a fitting approach to the tomb of a prince whose memory is held in reverence to the present day. The tomb is placed some distance behind a temple in a grove of tall trees. The immediate approach to it is through a side gate in the temple court. Passing through the gate, a gradual ascent is made over a stone path, with railings on each side cut into panels from blocks of stone. The whole is completely enclosed from outside view by trees. The pathway and railings are covered with Moss, which is most carefully preserved, and visitors are reminded that it must not be injured. To ensure it against damage from heeled shoes, foreigners are requested to take them off and accept a pair of slippers instead.

Natural Grafting.—This is very common in the case of various kinds of roots, and not uncommon in that of the branches of trees and shrubs in Michigan. In Branch County stand two trees, 12 ft. apart, each about 12 in. through. They run up 12 ft., when one starts off horizontally and strikes the other, when they grow together in one body. I heard of a specimen, perhaps not now standing—two Pines, about 4 ft. apart, diameters 26 in. and 20 in. respectively. About 16 ft. from the ground they are joined by a tie 6 in. in diameter. Above the point of union the smaller tree becomes the largest. Mr. Rowell, of Bennington, writes of two Beeches now growing on his farm. They are about 18 in. in diameter near the ground, thrifty and straight. About 20 ft. above the ground they are joined together. The trunks are nearly covered with the names of persons who have visited them, some of them dating back thirty years. I should say of these Beeches, which go to the Centennial, "united we stood, united we fell." Mr. Peck, of Muskegon, writes: "On the farm of Mr. Hubbard, Oceana County, is a specimen of natural grafting. Two trees, standing some 15 ft. apart, are united together some 10 ft. high, forming from thence upward a perfect single top, with a smooth, round, natural trunk. Mr. Shirts, of Shelby, in the same county, sends a drawing and description of two Sugar Maples in his section grown together. The larger tree stands up straight, and is about 2 ft. in diameter; the smaller tree is 50 ft. from the larger one, and is about 1 ft. in diameter. The small one, some 8 ft. from the ground, is bent over and touches the larger one where the graft occurs, 30 ft. above the ground. At the point of union the large tree is 20 in., and the small one 6 in. in diameter. I have looked many times at forest trees of different genera which had apparently grown together by root, trunk, or limbs, but on cutting into them I never found the least union of the wood.—PROFESSOR W. J. BEAL.

THE FLOWER GARDEN.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

LILIES are now in their glory, and will so continue for a long time to come. It is difficult to imagine the superb beauty which the many Lilies now in cultivation are likely to add to our gardens as soon as they have become strong and established plants therein. Even the old and well-known kinds are being improved. Thus Mr. Ware has a number of seedlings of the Turk's-cap Lily (Lilium Martagon), some of which are well worthy of being selected and preserved, though, even of Lilies one may have too many varieties. The varieties or allies of the Canadian Lily are also very beautiful just now, as indeed are a host of Californian and other kinds. Among the Labiate plants, various kinds of Phlomis (P. Samia, fruticosa, and herba-venti) are quite distinct and effective. They would prove most valuable plants in the wild garden, while not too rampant for borders. The brilliant little Alpine Toadflax is one of the gems among the Alpine flowers of the week; among the various kinds of Scabious now in abundant bloom the Alpine one (S. alpina) is worthy of note—a modest-looking, neatly-tufted plant, about 9 in. high, with soft blue flowers. The Campanula called Van Houttei is remarkably large and showy in flower, while dwarf in habit. The Mulleins (Verbascum) are at their best; the wild garden is the place for these. Some of the large Achilleas are handsome now, also the double A. serratifolia fl.-pl., which is deserving of culture in common with A. ptarmica fl.-pl. Various Erigerons are also in bloom; the dwarfer kinds do not take kindly to our southern borders, they enjoy the well-made rock-garden best. Androsace lanuginosa is a beautiful, silky, Himalayan, Alpine plant, deserving of more general culture. The tall and fine yellow Iris Monnieri is in flower, also the curious, rusty-looking Iris fulva. The Ferulas we have frequently praised for their leaf beauty, but they are not without attractions when in flower, the whitened stem and yellow flowers of F. tingitana are effective on strong plants at present. The little Mazus Pumilio, which paves the ground with such a close texture of leaves and flowers, is at its best; it is excellent for association with the more free-growing Alpine plants on the rock-garden or on raised borders. The long popular single Clarkias are now joined by a new double race, of which Mr. Hardy, of Bures, in Essex, possesses a good strain. Mr. Ware sends us the brilliant Dianthus Atkinsoni; this was raised by a lady in Norfolk, and was grown in that county by the late Mr. Nelson, who saved it during the long period when hardy flowers were neglected. It is a tall species, making very little foliage, unless when the flowers are pinched off.

Flower Shows.—Of late years perhaps few gatherings of a popular kind have been more on the increase than flower shows; almost every village now-a-days has its show of this kind, and the result ought to be advantageous as regards flower culture. Such meetings are, however, sometimes viewed in a different light; some patron of gardening may not allow his plants to be shown, while another is only too ready to do so, the result being dissatisfaction to all parties. Beautiful plants or fine fruit shown for the people to see ought to do good; still opinions unfavourable to showing are entertained—let us hope on false grounds, for most cultivators reap either directly or indirectly some benefit from exhibiting the produce of their labour. The unfavourable opinions expressed are generally capable of explanation, and it is to be regretted that such opinions should acquire weight, as showing is right in the main if only properly conducted. The chief points are to get together good exhibitions, and to endeavour by every means to maintain the popularity of such displays. In the industrial parts of England they are certainly on the increase, and they answer well as a village holliday, the exhibitors, whether they receive a prize or not, being well repaid for months of toil by the interest that is evidently being taken in their productions.—R. M.

Double Rose and White Ragged Robin (Lychnis Flos-cuculi fl.-pl. albo et roseo).—These have both done very well with me this year. The white variety is very scarce, and I was years before I could obtain one plant of it, which I am diligently endeavouring to increase. Lychnis viscosa alba fl.-pl. has also been a mass of bloom, and is a most delicately-beautiful flower.—H. HARPUR CREWE.

The Austrian Hairbell (Campanula pulla).

Canadian Whorl-leaved Lily (L. philadelphicum).

Blue-flowered Mullein (Verbascum phœniceum).

Dwarf Iberis (I. umbellata, var. formosa nana).

Dandelion-leaved Œnothera (Œ. taraxacifolia).

Missouri Œnothera (Œ. macrocarpa).

Himalayan Androsace (A. lanuginosa).

Cruciform Gentian (Gentiana cruciata).

Alpine Toadflax (Linaria alpina).

Noble Yarrow (Achillea filipendula).

Tangier Ferula (F. tingitana).

Lavender Cotton (Santolina Chamæcyparissus).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

NOTES FROM OXFORDSHIRE.

AMONGST the innumerable fine hardy plants at present in flower in the garden I jotted down the names of the following, which represent some of the most effective. Foremost amongt them may be named Aquilegia chrysantha, with flowers of a deep yellow and spurs as long as those of A. cœrulea. Of this I received the seed direct from the Rocky Mountains, and hope it may prove a better perennial than other choice Columbines, which are certainly only rather long-lived biennials. Sempervivum Laygeria, which has pretty rose-coloured flowers, is a good subject for rockwork, or the front line of a mixed border; it is an improvement on S. arachnoideum. Silene Elizabethæ, a rare Alpine species, is now in full bloom; it has been for three years in an ordinary border, and forms a fine healthy patch. The only precaution taken with it has been to cover the ground with small stones a few inches round and tight up to the collar. The flowers are large, of a deep rose colour, greatly resembling those of a Clarkia. S. alpestris, with its snowy-white blooms, is not at all fastidious. S. quadridentata resembles the latter, and though not so good, deserves a place on rockwork, being rather dwarfer. Campanula Van Houttei is a very fine plant, 3 ft. in height, with blue flowers larger than those of a Canterbury Bell. C. pulla, very dwarf, with deep purple flowers, is now in bloom, as are also the old C. turbinata and C. garganica. We have likewise Campanula isophylla, fragilis, Barrelieri, Elatines, muralis, and modesta, amongst the dwarf varieties, all in flower. Next in size, C. nobilis in variety, barbata, Hostii (probably a variety of the common Hairbell); also C. carpatica, glomerata, persicifolia, urticæfolia, and their varieties. The true Lupine (Lupinus arboreus) is in full bloom; it does fairly well in the open border, but its proper place is against a wall, where its yellow flowers are very attractive. It would probably also live longer under these circumstances. Geraniums ibericum and platypetalum are worthy of a place in the best collections (they have showy, purple blossoms), as is the old G. sanguineum, in fact, some patches of the latter are now the most conspicuous objects in the wild garden. I have also a rose-coloured Geranium with the habit and stature of G. ibericum, but for which I cannot get a name. Eremostachys laciniata (worthily described in THE GARDEN about a fortnight ago—see p. 590, Vol. IX.), is very effective. The Baptisias (exaltata, australis, and alba), are now in bloom, also a magnificent yellow Potentilla named Vase d'Or. Triteleia Murrayana and T. laxa are very pretty and perfectly hardy bulbs. Æthionema grandiflorum should have a place in even the choicest collections. Orchis foliosa is a magnificent plant, and though from Madeira is quite hardy; it likes plenty of moisture in summer. Iris tingitana, which was heralded by a flourish of trumpets, is, in my estimation, but an ordinary blue Spanish Iris. Mazus Pumilio, though not showy, is a pretty and interesting little plant when near the eye, but in the level border insignificant; though by many said not to be hardy, it has thriven well here for some years, and that on the level ground. Astragalus monspessulanus, also A. hypoglottis, and the white variety, look well at this season on a raised bank by the side of Convolvulus mauritanicus and Callirhoe involucrata. Those exquisite Alpine Pinks (Dianthus alpinus and D. neglectus) are in full beauty now. Androsace lactea shows its chaste white blooms. Leontopodium alpinum (the German Edelweiss) is curious if not showy, and is of easy cultivation. Brodiæa coccinea and B. congesta make good companions to one another—one scarlet, the other mauve. I like the latter best, B. coccinea having such a length of "bare leg." Ixias are now flowering well in the open border, where we do not even put a handful of leaves over them in winter; also Babianas, Sparaxis, and Trichonemas. The only precaution taken is to thoroughly drain the soil underneath them. Epilobium obcordatum is one of the best of hardy plants; it is now 6 in. in height, and smothered with rose-coloured bloom. Dictamnus Fraxinella, white and purple, are well out; also a larger variety, called D. tauricus. Cypripedium spectabile is in bloom, also Chrysobactron Hookeri. Two fine Irises are I. ochroleuca and I. sibirica alba—both of which in rich soil grow over 5 ft. in height; the first-named is particularly good. Aconitum lycoctonum has pale yellow flowers, produced in great profusion, and a large plant of it is now as effective as anything in my garden. On looking over these notes again I find I have forgotten Silene Pumilio—a fine plant in the way of S. acaulis, but with much larger and handsomer flowers. It must be protected from slugs or wood-lice, as they seem to have an especial affection for its half-opened buds. OXON.

Erysimum arkansanum.—This showy, rich yellow, and sweet-scented annual flower deserves some attention, being delicately scented, and useful for cutting in spring and early summer. We notice handsome bunches of it in Covent Garden, brought by Mr. Neighbour, of Hounslow, who sends so many hardy flowers to the London market.

FOXGLOVES.

FOR semi-wild scenery, the neighbourhood of Ferneries naturally arranged, clothing steep hill-sides, or for lighting up, as it were, the outskirts of shrubberies not too severely trimmed or dressed, few plants are more strikingly beautiful than Foxgloves; they blossom at a season when Thorns, Lilacs, Laburnums, and most other flowering trees and shrubs are over, and when colour is greatly wanted to light up the dull green that trees and shrubs always assume in July. The best way of establishing them in such positions is to secure a plentiful supply of seed, and scatter it with a liberal hand over all the prominent points in wildernesses and shrubberies from the middle of August till the first week in September. A sufficient number of the seeds will grow to thoroughly alter the character of the scenery next year, and afterwards they will take care of themselves; and if once fairly established on the loftiest or most prominent points, they will descend into the gorges or ravines as the seeds annually ripen and scatter themselves, and if at any time they become too numerous, a few here and there can easily be pulled up. They always have the best effect when growing in irregular patches or masses, now widening out into a grand bold mass, and then thinning down to here and there a single specimen. They may also be sown on a shady border, and transplanted when large enough in autumn or spring. The seeds should be very thinly covered with light, sifted soil, and, if kept moist, will soon germinate. There are now many beautiful varieties of Foxglove in cultivation, and, like the Gloxinia, they constantly vary when raised from seeds. But for the purpose I have indicated, the common wild forms are almost as effective as the more choice spotted varieties; and when once a beginning is made, great improvements may be effected by selecting a few of the best varieties for seed-bearing. E. HOBDAY.

Ramsey Abbey.

SINGLE VARIETIES OF SWEET WILLIAM.

LIKE the Stock and the Wallflower, the Sweet William, even in a single state, finds a place in every garden. It requires but the smallest possible amount of care to produce it in its greatest beauty. If the soil in which it is planted be but fairly good, it will grow and bloom in perfection without any trouble, requiring no special attention, not even the help of a stick to support its heads of bloom. To get the Sweet William in fine form, fresh seedlings should be raised every year; the seed should be sown in the open ground thinly, early in May; by so doing it germinates rapidly under the influence of the summer's increasing heat, and comparatively large plants are thus ready for planting out in the autumn. If, however, the seed be sown in a box or pan, or in any confined space, the seedlings should be planted out into some vacant piece of ground as soon as they are large enough to be moved with safety, and then they may be transferred to their permanent places at leisure in autumn. Plants that are intended for the mixed border ought to be very strong before planting out, so as to throw up numerous heads of flower, which will support each other against rain and wind, while small plants throw up one head only, which is almost sure to be broken, unless supported by means of a stick, and tied. Like all plants that produce compact heads of bloom, the Sweet William is most effective when grown in a mass, as then the peculiar evenness of height and flatness of truss that characterise it are seen to the best advantage. A large bed of it produces a grand effect, scarcely two plants having flowers exactly alike as regards markings, but all equal in size of truss and roundness of pip. Such a bed is worth a long journey to see, and would create no small enthusiasm in the minds of many who have, under the influences of bedding out and other specialities of plant growth, almost forgotten the existence of the Sweet William and other old favourites. There are several forms of Sweet Williams in cultivation, the finest being a strain that is a sort of fusion of the old Auricula-eyed and Hunt's well-known variety. Both of these kinds produce large heads of bloom, the Auricula-eyed having, in every case, a distinct white eye with a margin of some dark colour; but most of the flowers are what is known as saw-edged, that is, jagged and uneven in outline—a great drawback, which materially detracts from their beauty. Hunt's strain produces large pips of varied colours, few having white eyes, but most of them have fairly smooth edges. A good combination of these strains now furnishes fine varieties without these defects, the pips being larger than a shilling; they are pro-

duced in large trusses, and of the most varied hues of colour. Usually this combination produces a majority of light flowers, dark ones being the exception. As a rule, also, the dark-coloured flowers are smaller and inferior in quality to light

Improved Strain of Sweet William.

ones; but no doubt they are amenable to careful selection, and probably will be improved and become equally good very shortly.

PURPLE-LEAVED SWEET WILLIAM (Dianthus barbatus atropurpureus).—This is a useful, fine-foliaged plant for winter decorative gardening, and, excepting the Ajuga reptans atrosanguinea, it is almost the only hardy plant that gives a deep Perilla-like tint during the winter months. The foliage is larger than that of the common kinds, and although green in the seedling, yet, as the season advances, the colour becomes of a copper-purple, and keeps so until the plants throw

Purple-leaved Sweet William.

up bloom. The flowers are of rather poor quality, but by no means unattractive; they are very effective in a mass, but individually inferior to those of the best strains. The chief value of the plant, however, lies in its hardiness and in the colour of its foliage. Seed should be sown early in May, and the usual plan of pricking off adopted, to secure thriving plants for the winter. In a few districts this plant is largely grown for market. A. D.

RAISING NEW VARIETIES OF CARNATIONS AND PICOTEES.

"EVERY florist worthy of the name either does or ought to aim at raising seedlings which are an improvement on older varieties; in this, indeed, lies the chief and true secret of delight in floriculture." So wrote the late Dr. Horner just eight-and-twenty years ago, and no writer was better able to state a truth in clear and forcible language than he was. I have had (says Mr. George Rudd, in the "Florist"), considerable practice in cross-breeding, and in making the following observations on the subject:—"I desire, at the outset, to impress upon the mind of every interested reader that it will be only by the most careful selection of the parents and the perfect ripening of the seed, that varieties worthy of cultivation and likely to confer fame on the raiser can be expected. From neglect or inability—it matters little which, save that one is a fault, and the other a misfortune—to get the seed perfectly ripened, wholesale disappointments have arisen, and I venture to assert, as an axiom beyond dispute, that unripened seed cannot produce a healthy-constitutioned or long-lived issue. Assuming, however, that these great causes of failure have been avoided—the first by selection, after attentive consideration of the parents, which, if possible, should be of robust habit, more especially in the case of the seed-bearing or mother-plant, and which should bear flowers of the highest properties in the eyes of the florist—the work to be done will be very simple. In the first place, let the operator provide himself with a sufficient quantity of small squares of parchment for labels on which to record the crosses he effects, and assuming his varieties are numbered, and his first cross is Admiral Curzon (No. 1) and Dreadnought (No. 6), he marks the label thus:—

No. 1.
×
No. 6.

indicating that pollen from No. 1 has fertilised the ovary of No. 6; and this label being attached, the work proceeds. Some time last year I noted that a writer recommended resort being made to single or semi-double flowers for the purpose of obtaining pollen, on the ground that pollen could rarely be found in double flowers. I desire emphatically to record my protest against such a dogma, and to repeat what I have already stated, that no improvement can possibly be hoped for, save by starting from the most advanced point yet attained. And it is a mistake to assert that pollen cannot be obtained from double flowers. Let the would-be operator know how to seek it, and I will guarantee he will rarely seek in vain; whilst, if properly manipulated, such varieties will rarely refuse to bear seed.

My practice is, a short time before the flowers proposed for seed-bearing are fully expanded, or the anthers or pollen-bearing vessels have burst (covered with fine dust), should the variety be very full of petals, to remove a few of the inner ones and the anthers with a pair of small tweezers or scissors, being careful to remove each petal singly, and leaving the horns or styles untouched. Then, as the styles show they are expanded at the ends, apply pollen from the variety with which you desire to fertilise, the best time for the operation being about nine a.m., as at that time the heat of the sun will not probably have dried the viscid moisture to be found at the points of the styles, and without which no fertilisation is likely to result. To prevent this evil—the drying of the secretion on the points of the styles—it is a good practice to shade the flower, which will then be preserved much longer in a suitable condition for the operator. Should it, however, be found that from any cause the points of the styles have become dry, it will be well to cut off the extreme ends the night before you desire to fertilise the variety; and if the flower be not very old, the cross will, as a rule, be certain to take effect. The great difficulty experienced by the beginner is the finding of the pollen, some varieties producing very little. A few sorts, however, as Sir J. Paxton, S.B., and Brunette, Red Picotee, carry it well up in the centre of the flower, where it will be readily distinguished. In other varieties, the pollen will be found partly down in the pod; and again, in some other varieties, though none has been perceptible to the eye, I have found it by introducing a camel's-hair pencil into the bottom of the pod, and working it amongst the petals, thus showing tolerably conclusively that in such varieties the pollen is quickly shed. A great enemy to pollen is thrip, and where this abounds it is nearly impossible to obtain any. In such circumstances, my practice is to cut the flower I desire to use as the male parent before complete expansion, and permit it to develop itself in water in a cool room, and then I have generally been successful. A very little pollen will be effective, if properly applied. For this purpose, as I have said previously, I use a small camel's-hair pencil, damping it before commencing by drawing it through my lips, and to obviate the retention of too much moisture, passing it again between my finger and thumb, thus obtaining a fine point, with which I can collect the pollen from a single anther at once without waste; and this, properly applied, will be found sufficient to fertilise one bloom; so that from a fertile, pollen-bearing plant a considerable

number of flowers may be fertilised. About the second day after fertilisation—varying somewhat with the age of the flower operated upon—the bloom will collapse, and from this time forward, until the ripening and gathering of the seed, the ovary should be carefully guarded from wet, which otherwise will surely destroy the work and hopes of the hybridiser by rotting the incipient seed. Let the flowers hang down till the petals are decayed, when they should be carefully removed one at a time, care being taken in the operation neither to injure the seed-vessel nor styles, which should remain on as long as they will. The calyx, also, should be split down so as to give room for the seed-pod to expand and prevent the lodgment of damp. When the pods are ripe, which may be discovered by their change of colour from green to straw, and by their fulness and hardness to the touch, they may be gathered, cutting the stems as long as possible and hanging them in a cool, dry room. When thoroughly dried pack them up and put them away in any cool, dry receptacle, until required for sowing.

There are some varieties which frequently do not throw up any styles (John Smith, R.P., for instance); in this case it will be necessary to lodge the pollen on the top of the pericarpium, where the styles spring from. The earlier fertilisation can be commenced the better, as thus the plants have a longer time and opportunity to ripen the seed, which, when the season is wet, is very difficult. Finally, let all bear in mind that the finest seed, and therefore the finest plants, will always be produced from the leading blooms.

Obtaining Hardy Border Plants.—I am extremely fond of hardy herbaceous plants, and had a tolerable collection of them, but having had a long illness, and being afflicted with a gardener who has remorselessly dug up my borders, will you kindly direct me to some nurseryman who has a really good stock of the various kinds of Campanulas, Aquilegias, Delphiniums, &c. I cannot now recall the names of many I once had. I find that our local nurserymen deal exclusively in bedding-out plants, stove plants, and rare things. None have really any good plants of the old-fashioned flowers of which I am fond. Clove Carnations, white and crimson, I am anxious for, as well as single Peonies, which are so very beautiful; of Phloxes I have plenty. If you could tell me where to go for these things I should be much indebted to you.—B. F. B. [We print this as a hint to provincial nurserymen respecting the difficulties which the public experience in procuring supplies of plants which are now becoming very popular.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Œnothera eximia.—I have a bed of this now in full beauty, in which I counted 148 fully expanded blooms this evening (June 28) shortly after 9 p.m. Their fragrance scents the whole garden. This beautiful plant seems to luxuriate in our hot, shallow, chalky soil.—H. Harpur Crewe.

Perpetual-blooming Rose (Rosa semperflorens).—This now nearly-forgotten Rose is sometimes found in old country gardens under the name of the Crimson China; it is quite hardy, a profuse bloomer, and ought to find a place on sunny walls everywhere, along with the better-known monthly China Rose. It was introduced to this country as long ago as 1790, and was for a time extremely popular. It grows and flowers freely in pots, and may not unfrequently be met with in cottage windows. It is readily propagated by means of cuttings, and will grow freely in any good garden soil.—B.

Tolmiæa Menziesi.—This is a curious rather than handsome Saxifrageous plant from Oregon, related to Tiarella. It propagates naturally and freely by adventitious buds, produced at the junction of the leaf-stalk with the blade, in the manner of Begonia. We have five plants of it that show this, sent by Mr. Hall, of Illinois, who directs attention to the peculiarity. He states that any of the leaves may be taken off and used successfully for propagation.—Asa Gray.

The Summer-flowering Triteleias.—Hitherto these have been thought little of in comparison with the now popular spring-flowering kind, but they are very beautiful hardy flowers, and when seen in well-grown specimens will be thought among the finest of their kind. Triteleia Murrayana and T. laxa are both now in bloom, and we find they last a considerable time when cut.

Our Native Orchids.—The different varieties of these now in bloom constitute the prettiest wild flowers which we have at present in the north, and those about to form a wild garden should make some special preparation in it for their growth. They grow abundantly in some parts of Northumberland, and those who have had no opportunity of seeing them in their native wilds can form no correct idea of their beauty.—J. T.

Cyclobothra alba.—This is full of bloom. It has been kept in a pot in a cold frame during the winter. It is a very floriferous species, each bulb producing from six to eight flower-buds, and the texture and appearance of the bloom are very remarkable. It looks as if it were made of satin spar.—H. Harpur Crewe.

Sedum glaucum.—I have a pan full of this pretty carpet Sedum, about 18 in. in diameter, now a perfect mass of bloom. Small and comparatively ineffective as the individual flowers are in the mass, they are really beautiful. This pan was filled more than fifteen months ago.—D.

THE FRUIT GARDEN.

GLASS-HOUSES *versus* WALLS FOR FRUIT-CULTURE.

Perhaps there is not another country in the world where there is such an amount of money invested in, and so much skill and persevering energy applied to, fruit-culture, with such a small return in the way of fruit crops of a certain class, as in Great Britain. If, for example, it be considered how much money it takes to erect good garden-walls, and the labour expended in the making of suitable wall-fruit borders—the concreting, the draining, and the bringing in of good soil in the majority of localities—for these preliminaries the outlay is immense. Then there is the purchase of expensive, trained trees—the annual and constant care required in pruning, pinching, and training, besides the almost continuous battle with a numerous train of destructive insects of one sort and another, and the abortive expedients put in operation annually with the object of saving the blossoms from frosts and blasting east winds. The sum total of capital invested and labour annually expended is, we might almost say, appalling in comparison with the return in crops of good fruit in the case of such as Peaches, Apricots, Plums, Pears, &c. This, it must be admitted, is of wide application. The wonder is that this losing game has been so long and perseveringly persisted in. We are confident that, in the case of any other department, so fruitless an expenditure would soon be abandoned in despair. No doubt the necessity for walls as a fence and for shelter accounts for this state of things to a great extent. In a great many localities a good crop of fruit about once in five years is about as much as can be counted on; and perhaps, taking one year with another, the returns in some localities would not pay for the shreds and nails necessary for training the trees. This rule does not, of course, apply to those parts of the kingdom that are more favoured in the way of climate and soil; and in their case walls do good service in producing fine dessert Pears and stone fruits. It is not to these districts that we wish these remarks to apply. Yet, even the most favoured spots in England are not always free from such weather as destroys even wall-fruit crops. But in such unfortunate districts as those to which we are directing our remarks, an amount of disheartening mishaps to wall-fruits has to be faced annually, which, it is not too much to say, would serve to put an end to any other pursuit; while, at some altitudes, the work is stoically carried out without any hope whatever of gaining the end in view.

In times, happily now gone by, when glass was dear, and there was no steam-driven machinery for wood-work, there was less cause to wonder at the persistency with which ugly walls were built, and hidden out of sight of the mansion as an eyesore, and more as a necessary evil for the purposes of a fence and shelter to tender crops than anything else. What can be uglier in a park landscape—especially if it can be looked down on—than a square piece of ground hemmed in with hideous red brick walls? It is as complete a blot on any landscape as can be well imagined; and in the making of new gardens now, there is but little excuse for the erection of walls in localities where the climate is not such as to make them give a fair return in fruit-crops. Now that machinery driven by steam has taken the place of the ordinary saw, plane, and mortising chisel in the construction of the wood-work of glass-houses, and glass is less than half the price it was at one time, a brick wall should never be thought of in many localities for the growth of certain fruits. The difference between the construction of a 15-in. or 18-in. brick wall, and the erection of span-roofed glass structures, is not very great; and we are certain that we are within the mark when we say that the bearing surface protected with glass would, taking the average run of seasons, yield quite three times as much and finer fruit than the same surface of walls. If this be so, then, it is beyond a doubt that the same money expended on glass as is necessary for walls would yield a larger and better return in fruit, while for the mere purposes of shelter, that can be attained in a much more ornamental way than by building ugly and unproductive brick fences. Of course, in the case of old places where the garden walls already exist, it is easy to cover a portion of them with glass, and on a comparatively small area secure three times the amount of produce that the whole wall-surfaces now furnish of certain fruits. This is a class of structure now becoming more appreciated than it has been, and one which cannot be too strongly recommended, not only for the certain return in the way of fruit, but for the pleasure which it yields. No doubt some may be prevented from adopting glass instead of bricks and mortar, from the impression that glass-houses are very expensive in tear and wear. It should, however, be remembered that glass-houses, kept cool and airy and comparatively dry, require very little paint compared with ordinary plant and forcing houses; and also that houses, as now erected, with a minimum of wood and a maximum of glass, require not half so much paint as the old style of houses. As a matter of

pounds, shillings, and pence, even glass-houses will pay better than brick walls in very many localities when devoted to the culture of the fruits named at the commencement of these remarks. Besides, such erections can be profitably made use of for other purposes besides fruit culture.

Perhaps some may be inclined to say that we are now merely advocating the orchard-house system—one which is common enough. It is not quite our aim to do that. What we wish to recommend to those who may have new gardens to make in bad climates is, instead of going in so heavily for mere bricks and mortar, to invest their money in glass with the absolute certainty of getting regular crops of good fruit, instead of running a hundred risks on the bare-wall system. Then, as to the furnishing of such erections, some may ask, Are we to cultivate in pots or in borders in the usual way? To the amateur or small grower who would like a variety of fruits from a small glass-house, pots do very well; but where fruits are wanted of the very best quality, in great quantity, and with the least possible labour, we say plant your trees in well-prepared borders.

The expense of furnishing a house with trees in pots is much greater than that of furnishing it with trellis-trained trees. The after-labour is also much more, and the chances of failure are also increased by having recourse to trees in pots. As has already been remarked, the system is only to be recommended when a great variety of fruits in small quantity is the object from a small house. And if expense be not an object, pot-trees may be had recourse to in the body of any glass-house or case till the permanent trees come into bearing and cover the roof. Stone-fruits of all sorts and some varieties of Pears do very well in pots; and such Apples as the White Calville are worthy of a place in such structures, both as permanent trees and in pots for a while at first.—"The Gardener."

THE COVENT GARDEN BLACK FIG.

A very distinct variety of Fig has for some years past

Black Bordeaux Fig.

been imported to Covent Garden in limited quantities from the south of France under a variety of local names, the correct one being, however, Black Bordeaux, or Violet Longue of the French. It is quite different in shape from any other Fig with which we are acquainted, and the colour is a dead purplish-black. For market purposes, this Fig has many recommendations; it ripens early, and therefore it can be sold to the best advantage while other Figs are scarce, and its tough skin enables it to resist the damage incidental to transit by steamer and railway. Its flesh is deep red in colour, and peculiarly sweet and delicate. It comes to the market in May and beginning of June, and may be purchased at about 3s. to 4s. per dozen. The annexed engraving, made from specimens sent to us by Mr. Webber, represents a fruit of average size.

B.

Thinning Grapes.—Grape-growers are all agreed upon one point, namely, that the sooner Grapes are thinned the better. If done soon after the Vines are out of flower, the operator ought to be practically acquainted with the habits and characteristics of the different varieties, for if he be not, he will be unable at so early a stage to distinguish between berries that are fertilized and those that are not. To produce a bunch of Grapes well formed in all points, is, in the case of some varieties, a difficult matter, in others we have little more to do than to assist nature. Every skilful Grape-grower knows that what is termed a well-finished bunch of Grapes cannot be produced by chance or hap-hazard; it is much easier to grow large bunches than to finish them well. It is therefore hardly possible to over-estimate the value of early thinning; the Vine is relieved of a needless drain upon it, and there is no need to disturb the fruit in order that the operator may get at the berries which he wishes to remove. One evil belonging to thinning Grapes when in an advanced stage of growth, is that if the point of the scissors gets moist with sap from the fruit-stalks, and the acid touches the fruit, it produces a spot that the bloom will never cover, although the berries may be in every other respect perfect. The hair-like streaks that we sometimes see upon otherwise beautiful black Grapes are often produced by the point of the scissors at an early stage of growth. It is a well-known fact that the bloom of Grapes roughly handled when growing never becomes perfect. Seeing the fruit shown at Edinburgh last autumn, I visited several notable places in the North, from which no fruit was sent to the exhibition, and in one and all of them I was struck with the quality and finish of the Grapes. At Dalkeith I saw a bunch of the Madresfield Court which weighed 2½ lbs., as perfect in every point as any of us had ever seen a bunch of Grapes.—J. Thomson, *Shawdon.*

FRUIT FARMING.

At the last meeting of the Midland Farmers' Club, held at the Great Western Hotel, Birmingham, the Rev. W. Lea read a paper on "Fruit Farming." He said the chief point to bring forward for discussion was, "Will it pay a farmer in the present day to make the growth of fruit a portion of the regular work of his farm?" A few years ago he should have answered without any hesitation in the affirmative, but before he did so now he should first inquire into the condition of the labour market in the district in which it was proposed to plant. Fruit was an article which must go off when it was ripe. If it were not gathered and marketed, some sorts would be spoilt, and to gather it a certain amount of women's and children's labour was required. If this were at command, one difficulty would be removed. The questions of soil and situation should, of course, be considered. There were few soils, even the lightest sands, which would not bear some kind of fruit. But before a man began to plant he should ascertain, from a careful inspection and inquiry in the neighbourhood, what fruits were congenial to the soil, and confine himself to those sorts. Next came the question whether the landlord or the tenant should plant; if the latter, would it pay him to plant on a seven, fourteen, or on a twenty-one years' lease; and, if he left at the end of these terms, what compensation should he receive, and from whom should he receive it—from the landlord or from the incoming tenant? He was of opinion that the best arrangement would be for the tenant to plant, and for the landlord to undertake to pay, at the end of the lease, the cost price of all trees left in healthy condition, and interest upon the outlay at 5 per cent. per annum. Fruit planting was profitable both to landlord and tenant, if properly done, and the sorts well selected. The advisability of planting young fruit trees in a hedgerow must depend a good deal on the age and strength and nature of the hedge. If it were of old vigorous Quick, the roots would probably have taken such an entire possession of the soil that a stock newly introduced into it would only lead a sort of languishing existence for several years, perhaps, and then die away. But if any one wished to try the experiment, he should recommend him to plant wild stocks, and graft them with the sorts desired. If a hedge were being planted, there would be no such difficulty; the fruit trees would have the same chance as the Quick, and both would grow up side by side together. This plan would be worth trying, or indeed the first-mentioned, provided the hedge were between two arable fields. If it were between two Grass fields, or with a Grass field even on one side, the advantage would be questionable, for the cattle, in trying to get at the fruit—of which they are very fond—would probably do as much harm in breaking the fences as would be covered by the profit of the fruit. Some damage, too, would unavoidably be done to the hedge in the gathering of the fruit. Planting an orchard on turf was comparatively expensive, which was a point decidedly to be taken into account. A good deal of labour was required to do it well, and if not done well, it were better not attempted at all. On the whole, it was questionable whether it would pay to plant an orchard on turf, except on some banky, sloping fields, with a south aspect, which seemed specially adapted to the purpose. Then came the third alternative, which seemed to him the most desirable—to plant an orchard on a well-fenced piece of arable land, as near as may be to

the house, and from which cattle of all kinds are to be entirely excluded. Here it might be done at much less expense, as no protection would be required, except against ground game. Supposing an acre to be square, it might be cultivated in two ways—(1) by planting standard fruit trees in rows 30 ft. apart, and by filling up the space between with rows of Plums and bushes; (2) by standards—Apples, Pears, and Cherries, by Plums or Damsons, by bushes, Currants (either Black or Red), and Gooseberries. According to this plan, the whole field would have to be cultivated with the spade, and would take pretty well the whole time of one man, if it were three or four acres in extent. What was called "pot fruit" was required now as a rule. The Apples and Pears which paid best were those which came in earliest, and which kept latest. These last probably brought the highest price. But when the cost of storage and of picking over had been deducted, he doubted if they paid so well as the first. If they were going to buy trees, let them go to the nurseries themselves, select and mark the trees to be sent in the planting season. They were not necessarily to pick out the biggest, but rather vigorous, healthy young stocks which showed no sign of having been checked or stunted in their growth. They should not go in for too many varieties of fruit. On his three acres he had more than 100 sorts of Pears, 40 of Apples, 30 of Plums, to say nothing of Currants and Gooseberries. From his own point of view this variety was necessary, for he was experimenting to see what sorts would best suit the locality and pay the best; but to farmers this endless variety would be very troublesome, especially if the specimens were dotted about in different parts. The best plan, if they were planting a hedgerow, was to plant it all with one sort of fruit; then one going over the ground, or at most two gatherings, sufficed, and a vast deal of labour and confusion were saved. So, too, in orchards, whether on turf or arable. If they had several sorts, let them keep each sort in a separate row; or if more than one row of the same sort were desired, they should have the rows together, so that that portion of the ground might be cleared at once of its produce. They should be very careful about the pruning for the first three or four years, until the heads were got into shape. After this the trees might be left to themselves, merely cutting out the branches which interlaced from time to time.

Pinching versus Pruning.—If you are certain that a bud, when developed into a branch, will be superfluous—will grow out where a branch is not needed, or will come in conflict with other branches—you had better pinch it off, and let the nutriment that would go into the branch and be wasted, be diverted to those branches that are to remain. The horticulturist, or the amateur, who can spend a few hours a week for the next four weeks among his Pears, Peaches, Plums, and Cherries, or among his Grapes, Raspberries, shrubs, or flowering plants, watching their growth, and practising a little judicious pinching, will be likely to have more symmetrical and stronger trees and plants than the one who neglects to prune during their growth, and does all in that line after the suspension of growth. —"Rural Home." [No doubt judicious pinching, calculated to throw the vigour of the bush or tree into useful channels, is one of the best ways of pruning, but great care should be taken not to follow the injurious practice of over-pinching, as is frequently practised with the Pear and Apple in the form of miniature trees.]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Black Knot of Plum and Cherry Trees.—This is the subject of an important memoir, illustrated by plates, in the "Bulletin of the Harvard University." The paper is illustrated by three beautiful plates, showing this disease in various stages, and the whole structure, development, and fructification of Sphæria mortosa of Schucinitz, the fungus which produces this black knot, which so deforms and injures Plum and Cherry trees throughout the Northern States and Canada. The remedy is the knife or axe. For prevention Dr. Farlow recommends the extirpation of choke Cherry trees, upon which the pest largely breeds in the vicinity of Boston. Farther west it would be necessary to destroy all the wild Plum trees (Prunus americana), which are fearfully infested.

Thinning Pears.—The only way to insure full-sized specimens is to thin out early in the summer. With Apples, Pears, and Peaches, this thinning can be done in July, the smallest ones being pulled off, and the more advanced and perfect left. In orchard management, I have often plucked off half of the Pears on the trees, literally covering the ground with quarter-grown fruit. When gathering time came, what were left on would measure and weigh quite as much as if none were taken off, while their market value would be two-fold, at least; I have known of cases when it would be four times as much, with no injury to the trees. There are some kinds of Pears that will be more responsive to thinning than others, and will pay liberally for the labour. Kinds that set thickly, like William, Louise Bonne de Jersey, Duchesse d'Angoulême, Belle Lucrative, and Doyenné Boussock, should always be thinned when the fruit is the size of a Walnut. When two Pears come close together, one may be pulled off, and the remaining one, at the end of the season, will equal the two in size, and be greatly superior in quality. High culture and careful thinning of Apples and Pears (says Mr. Quin, writing in "Scribner's Monthly,") are the only sure road to success.

PLATE XXVIII.

A HYBRID PRIMROSE.

(PRIMULA INTERMEDIA).

THE variety of Primrose which we have selected for our plate this week is a garden hybrid, raised by Mr. Fuller, of Leeds, between P. ciliata and P. auricula, and sent out by Mr. W. Bull some years ago. It was awarded a certificate by the Royal Botanic Society in 1865, and has been recently shown by Mr. G. F. Wilson, who cultivates it very successfully, and also by other growers of hardy flowers. Its habit closely resembles that of some of the dwarf forms of Alpine Auriculas, its flowers, purplish-crimson in colour, with a conspicuous yellow eye, being borne on stout, erect scapes. It is delicately fragrant, and well deserves culture on sheltered portions of the rock garden, where its richly-tinted blossoms are seen to advantage.

In addition to the interest attached to Primroses as hardy spring-flowering plants, they are of great value to the hybridiser, owing to their dimorphic condition. Many experiments with these dimorphic or long and short styled forms of Primrose have been made by Darwin, who has established the fact that a pin-eyed flower cannot be adequately fertilised by a thrum-eyed form of the same species, but that when the style, or pin and anthers, or thrum are equal in length (in separate flowers), fertilisation may be accomplished. Alluding to this fact, a recent writer says:—"The first natural inference, of course, would be that the unfertility of the pin-eyed or thrum-eyed flower was due to the style and stamens being stationed at a distance from each other;" but Darwin at once removed this misconception by going through the process of fertilising them artificially. The pollen, too, was found to be of different dimensions in the two cases, and the style also different. When the experiment was made with different flowers, the stamens of the thrum-eyed flower were found to fertilise the pin-eyed style, both being at the same level at the mouth of the tube of the corolla, while the stamens of the pin-eyed flower fertilised the style of the thrum-eyed flower, each being respectively situated low down in the tube of the corolla. In experimenting, too, with distinct species, it was shown that the pollen of one of two forms of the same species, and not that of the other, would fertilise it. It has long been known that species A will fertilise species B, while species B will not fertilise species A, but the extension of such an exception to two forms of the same individual species was an important step gained in connection with cross-breeding. Although the attempt to fertilise the pin-eyed and thrum-eyed flowers with pollen of their own stamens may, in a general way, be called ineffectual, they were nevertheless not absolutely sterile, but a remarkable resemblance was found to exist between seed so obtained and its produce, and those of hybrid unions between different species. It is a singular fact that wherever dimorphic forms exist in any group of plants, as in Primula, Calceolaria, Phlox, &c., many of the species are found to hybridise freely, and this leads us to ask, Can dimorphism be the result of previous natural hybridism, or is it intended to facilitate the production of healthy progeny by cross-fertilisation, as is here shown to be the case? In connection with this singular dimorphism in the Primrose family, it is interesting to find that natural hybrids are unusually plentiful in this genus, no fewer than twenty-five having been described by Professor Kerner, of Innspruck, some of which are very beautiful. B.

Cultivation of Jaborandi and Eucalyptus.—Among the prizes instituted by the Société d'Acclimatation this year is one of 500 francs for the cultivation of Jaborandi (Pilocarpus pinnatus) in France or Algeria. The prize is to remain open till the 1st of December, 1885, and the conditions of its award are that the plant shall have been successfully cultivated upwards of five years, and that at least during the latter years the cultivation shall have extended over a demi-hectare. The cultivation must also be a commercial success. Another prize of 500 francs, to remain open till the same date, is offered for a "Practical and Theoretical Guide to the culture of the Eucalyptus." The authors are especially to make an investigation based on comparative experiments.

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A HYBRID PRIMULA (P. intermedia, Hort.)

SUPERFLUOUS BOTANICAL TERMS.

Is not botany already sufficiently encumbered with technical terms?—a fact which has often been pointed out. Mr. Sachs says:—"According as the union takes place between (1) different varieties of one species—between (2) different species of one genus—or between (3) two species belonging to different genera—the resulting hybrid may be termed a variety-hybrid, species-hybrid, or genus-hybrid. When a hybrid is made to unite with one of its parent forms or with another parent form, or with a hybrid of different origin, the product is termed (4) a derivation-hybrid. If we accept the above there is no reason why we should not add many more. The hybrid united to one or another parent form, or with another of different origin, is as well deserving of a substantive name as the union between any of those which he designates variety, species, or genus-hybrids. If we accept these practically worthless terms to express unions which, in a great majority of cases, there is doubt as to the actual parentage—to the exclusion of the old terms hybrid and cross, which are well understood, and which sufficiently express in a general way our ideas upon this subject—we might as well give up generic names, and confer the honour of a specific title upon every shade of difference in plant fertilisation. Mr. Sachs would call a union between two species of different genera genus-hybrids. But why this, when hybrid alone expresses it just as well? And why call the union between two varieties of the same species a variety-hybrid, when the union is not a hybrid union, and when the simple word "cross," with which we are all familiar, expresses the relationship just as well? We ask how many instances there are in which it is positively known that seedlings have been produced from the union of species belonging to different genera? And in these well-authenticated instances (few or many) is it not a stronger evidence of an erroneous botanical classification than of the degree of relationship implied by belonging to different genera? Again, we would ask how many instances are positively known in which such hybrids have been made to cross with parent forms, with other hybrid forms, or with any other forms? Surely such rare instances may better be described by combining the old words "cross" and "hybrid," properly so called, and to modify them with an adjective or so suited to the case. But scientific men—to their discredit, be it said—seem to delight in conjuring up new and difficult words, as if they were thus adding to the sum of information, instead of muddling their books with a mass of nonsense to render thrice difficult that which is already too difficult—to confound the student, and to discourage him from thorough study and investigation.—"Moore's Rural."

Art at the Academy.—It is time that a plain word should be said; that what is being everywhere spoken in the ear should be proclaimed upon the house-tops. Let it then for once be openly said that the majority of the works of academicians which hang upon the line are matters for contempt to every one with sympathies above the most vulgar and commonplace ideas; that the educated public will no longer stand them; that the poorest man who has been blessed with a heart to feel and a head to understand what is truly noble in art would scorn to hang them on his walls, or to show them to friends as his property, if he were offered an annuity to do so; that so far from the Royal Academy being an influence for raising public taste and perception for art, it is, in virtue of a large proportion of the works it most prominently exhibits, an engine for debasing and vulgarising public taste; that if the works of some seven or eight at least of the most prominent and prolific exhibitors, who write R.A. after their names, were collected and neatly piled in a pyramid, well served with petroleum or other inflammable substances and set fire to, and if a small slice of public money were voted to give pensions to their authors on condition of their never painting another picture, an important step would have been taken in the way of raising public taste, and providing for the advancement of English art.—H. H. Statham, in "Fortnightly Review."

The Crimson Horse Chestnut.—Visitors to Glasnevin must be greatly impressed with the marvellous tree beauty of the fine symmetrical specimen of Horse Chestnut, (Æsculus Hippocastanum var. rubicunda), which is a prominent feature in the centre of the grounds, and which is just now clothed with myriad thyrses of delicate crimson. The Hon. Daines Barrington aptly likened a tree of the normal form to a giant's nosegay. The similitude could apply with even greater force to this most beautiful and telling variety. Why is it not more extensively cultivated?

Lilium Chaixii.—For this I am indebted to the kindness of Mr. Maw; it has just opened a bloom, and proves to be very pretty and distinct, so much so indeed that it is sure to become a favourite.—H. Harpur Crewe, *Drayton-Beauchamp Rectory, Tring.*

CAMPANULAS FOR POT CULTURE.

The dwarf perennial Campanulas merit much more attention than they commonly receive. Equally pleasing, either in pots or borders, they are especially useful for the former, on account of their neat, dwarf, compact habit and portability. My collection is not a large one, but it includes several very fine kinds, of which C. turbinata is the chief parent, and some of the smaller but hardly less effective sorts. These Campanulas are eminently summer-blooming plants, and therefore need no house protection; they thrive well in large pots, and are especially suited for a large vase until the bloom is over. One of the most pleasing kinds, and specially useful as a vase plant, is the semi-trailing C. Barrelieri; small plants of this planted close up to the side of a vase would make a pretty edging for some of the white sorts, such as C. pumila alba and Henderson's White, both possessing great purity of colour, and being free bloomers. These Campanulas may be readily propagated, either by division of the roots early in the year, or by cuttings made of the young growth when about 2 in. in length. If these be taken off with a sharp knife just beneath the mould, and be placed in sandy soil in a cool house or frame and shaded for a few days, they will soon become rooted, and make good flowering plants the same season. Perhaps the earliest is the well-known Campanula garganica, a dwarf and slightly-spreading kind. Its foliage is rounded and somewhat laciniated, its flower-stalks about 6 in. in height, and bearing a great profusion of small pale blue bells with curved lips. This variety generally blooms in June. Next comes the pretty, pure white C. pumila alba, which is even more dwarf than the preceding, and produces in great abundance flower-stems 6 in. or so in height, bearing many pure white bells: this is a real gem. C. turbinata is the parent of several kinds, and is itself a variety of great value. In habit it is exceedingly dwarf and dense, the foliage not reaching a greater height than from 2 in. to 3 in. The flower-stems do not exceed 4 in. in length, and are surmounted by large erect bells of a bluish-purple colour about $1\frac{1}{2}$ in. in diameter. Well-established plants of it flower freely. C. turbinata hybrida has a dense, but more robust growth; its flowers are borne in great abundance on stems 9 in. in length. They are about the size of those of C. turbinata, but are rather more expanded and slightly paler in colour. C. turbinata macrocarpa has larger foliage of a pale green hue; its flowers, too, are larger than those of the preceding kind; they are borne on stems 12 in. in height, and are in colour intermediate between the above two sorts. C. turbinata cœrulea has a close, robust habit, with flowers the size of those of C. turbinata, opening white, and deepening to a pale mauve; they are borne on erect stems, from 7 in. to 8 in. in height: it is a very pleasing kind. C. turbinata floribunda is a very pale blue form of C. macrocarpa, not quite so robust, but a perfectly distinct kind. C. turbinata Dicksoni is a very beautiful variety, moderately robust in growth, and has large, almost pure white flowers, borne on stalks 9 in. in height; a very effective kind. C. Hendersoni alba has a neat, erect growth, and pure white flowers of medium size, borne on stems about 10 in. in height; a very charming variety. All Campanulas of the turbinata section produce upturned bells on erect or nearly erect stems. Last of the collection is the pretty C. Barrelieri, the latest to flower, coming in about a week after C. turbinata. It has a dwarf, creeping habit, producing medium-sized, mauve-coloured bells in great abundance, and admirably adapted for vases or hanging-baskets. A. D.

Australian Plants and Peat.—There is an idea prevalent among cultivators, and those who publish cultural directions about Australian plants, shrubs, and trees, about which I (Uncle Andrew in "The Gardener") wish to say a word. In growing Australian plants, such as Epacrises, Eucalypti, Kennedyas, &c., we are told to use peat in some proportion or other. Now I have been all round New Holland, I have also ridden across it from Twofold Bay on the east side to Adelaide on the west—or rather, to be accurate, south-west—besides being inland in a great many different parts, and I never saw as much peat as would light my pipe, if it were set fire to, so that I am decidedly of opinion that if Australian plants require peat it will have to be imported. I imagine that as yet growers have always been able to make leaf-mould serve their purpose, for

that and decomposed rocks appear to form the basis of the whole soil of the country. This hint may prove useful to many who cannot readily procure peat, which is only one form of decayed vegetable matter, while leaf-mould is another. I have often been astonished to see enormous Gum-trees growing out of a crack in a rock only a few inches wide, with no appearance of soil of any sort near them.

Common Water Lily (Nymphæa alba).—Few plants better repay careful culture than this, and if its rhizomes be manured annually, it is astonishing how much both flowers and foliage increase in size. This even happens where the mud in which it grows is enriched every year by fallen leaves. A rosy variety of it is grown in America, and I have read of a hardy crimson variety of it being grown in a tank in the Upsal Garden; both these would be welcome additions to our hardy aquaria. It has often occurred to me that we might obtain improved varieties of this Lily by hybridising its flowers with pollen from N. rubra, N. Devoniensis, N. cœrulea, or other brightly coloured kinds, and this is all the more likely to be possible, as not only does the common variety bear fertile seeds freely, but several of the exotic species have already shown their readiness to cross with each other.—B.

PARSONS GREEN.

This, the seat of Mr. W. S. Mitchell Innes, is situated on an eastern spur of Arthur's Seat, within half a mile of the ancient palace of Holyrood. From various parts of the grounds excellent views may be obtained, consisting of hill and dale on the one side, and of the Firth of Forth, with its numerous islands, on the other. Let us now, however, confine our remarks to the garden. At the west end of the mansion lies the flower garden, which until recently was little else than a sloping bank, with trap rock protruding here and there; now it consists of terraces and broad gravel-walks, ornamental vases, and plantations of Conifers. Tall Rhododendrons, Kalmias, and other shrubs have been employed to shut out from view unsightly walls; but one wall at the top of the flower garden was not so easily dealt with in that way, and therefore it was resolved to cover it with glass, which has been done on a magnificent scale. Its roof is in the form of an ellipsis, surmounted by ornamental domes, and under it are three compartments connected by wide open corridors, the whole being 96 ft. in length, and the centre 36 ft. from the front porch to the back wall. On each side of the central passage in this wall-fernery, for such it is, are built rockworks containing small caves and nooks suitable to the various requirements of its numerous inhabitants, all of which are in excellent health, the tree Ferns filling the domes overhead; while on their stems I observed several patches of Mungo Park's Moss. Here, too, are seedling Ferns coming up by the thousand, and were it not for judicious thinning they would soon be wrestling with their associates in the struggle for life. Plants of Adiantum Capillus-Veneris measure some 3 ft. through, and A. venustum is equally large, while Pteris scaberula may be said to have run wild. The height of this house inside is 18 ft., and its back wall is covered with Selaginella denticulata, intermixed with patches of Adiantums, Pteris serrulata, Davallias, and other Ferns, as shown in the accompanying illustration, the whole forming a perpendicular wall of verdure 16 ft. in height and 100 ft. in length. Large mirrors, too, introduced here and there, make the house appear twice as large as it is; two rustic fountains are placed at each end of it, and round these is planted Lobelia repens, which, though hardy, thrives remarkably well here amid shade and moisture. The ends of this house, I ought to remark, are faced with wire netting, and between this and the wall the space (6 in. in width) is filled with peat and leaf-mould, and planted in the same way as the back wall, to the height of 9 ft., the rest being glass. The doors are covered with Oak bark in as rustic a way as possible, that at the west end opening into the Filmy Fern-house: this is a low-roofed rustic-house, about 12 ft. square, and all the heat it gets is through opening the door between it and warmer compartments. In this house are to be seen fine specimens of Todeas, Trichomanes reniforme, T. radicans, T. polyanthos, Hymenophyllums of various sorts, and some really excellent British Mosses.

Passing outside, amidst a profusion of festooned creepers and hanging-baskets, by means of a flight of three steps, one reaches the other ranges of glass. The first is devoted to the cultivation of Camellias, all of which are in excellent condition. This house is a lean-to, 24 ft. long and 15 ft. wide, the back wall being 14 ft. high, and the roof entirely covered with a plant of the Maréchal Niel Rose, from which upwards of 2000 blooms are cut annually. The next house is a Vinery, 30 ft. long and 13 ft. wide, filled with Lady Downes Grape; the next, also a Vinery, 21 ft. long, is full of Black Hamburgh; from this one enters the conservatory, which is 52 ft. long and 18 ft. wide, gay late in autumn and winter with Chrysanthemums, Primulas, Cyclamens, Roman Hyacinths, &c. A notable plant in this house is Sparmannia africana, which flowers the whole winter through. Large plants of Heliotrope are planted against the back wall and flower profusely. The next house—which, until lately, has been used as a Melon-house, but which is now converted into an early Vinery—has been the subject of a somewhat novel experiment. A Chaptal Vine was planted some years ago in the corner of it next the conservatory, taken through a pane in the division wall, and trained to a wire above the passage; it soon grew the whole length of the house, which is 52 ft.; on converting the house into a Vinery the gardener, Mr. Clark, pulled this Vine-rod back and laid it beneath the soil at the back of the pipes the whole length of the house, turning it back about 2 ft. above the ground, and again placing the top beneath the soil for nearly the whole length of the house. On the middle or raised portion he grafted a number of varieties, and among others the Duke of Buccleuch, Black Hamburgh being placed at regular intervals along the rod in case the newer sorts should fail. This operation was performed in April, and every one of the grafts at once pushed strong shoots, so that by September the whole length of the rafters was covered with well-ripened, short-jointed wood, and each rod was allowed to carry two bunches, which were good both in cluster and berry. The next house is a Vinery, 36 ft. long, in which is grown Bowood Muscat, which bears good crops of large bunches of clear amber-coloured berries. In a corner of this house is a plant of Gros Colman, a kind which has large bunches and berries of great size and as black as Sloes. The next and end house is devoted to the cultivation of specimen plants, such as Azaleas, Heaths, and other kinds of hard-wooded plants, which, when in flower, are taken to the conservatory, and their places are filled during the summer months with the various kinds of Pelargonium. The whole of these ranges of glass is heated by two oval-flued boilers.

In front of the glass houses is a steep Grass bank, on which are cut long scroll beds with round beds between them; these were filled last season with Pansies, the best of which were Golden Gem and Sovereign in the yellow class, Alpha (purple), and Dickson's White Bedder, which is the best white. From a knoll on the eastern part of the grounds a splendid view is obtained in every direction, and on each side of a narrow walk at the top of the kitchen garden, and leading to this point, are some healthy bits of Alpine plants, for which a more suitable place could scarcely have been found. This knoll during the summer is one sheet of Dianthus deltoides and Polygala vulgaris, changing from blue to white, and many other interesting plants. R. M. W. R.

The Neill Prize.—This has been awarded to Mr. I. Anderson-Henry, Edinburgh, who certainly well deserves it. We are pleased that it has in this case been awarded to a gentleman well known in connection with horticultural progress and effort. When one sees for the first time the names of men to whom this prize is now and then awarded, one thinks of many really distinguished Scotchmen who have never been thought worthy of it, as, for example, Mr. Marnock, Dr. Moore of Glasnevin, and Mr. Niven; not to name others who have deserved equally well of their profession. Of course the Council can not desire to limit the prize to persons in their own immediate neighbourhood. We quote the following extract from Dr. Neill's Deed of Settlement:—"To the Caledonian Horticultural Society the sum of £500 sterling, for the purpose of the interest thereof being applied in furnishing a Medal or other reward, every second or third year, to any distinguished Scottish botanist or cultivator to be voted by the Society."

A WALL-FERNERY AT PARSONS GREEN, EDINBURGH.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Pelargoniums.—The beauty of large-flowered kinds that have been the first to bloom will now be over, and it is not desirable to allow them to push a second growth and flower again, which they will if not interfered with, as this prevents their being cut down and making growth that will bloom early next spring. If there be a scarcity of plants to take their place, and flowers be required, a portion may be allowed to go on blooming for a time. Move at once the plants that flowered first into the open air, so as to get the wood ripened before they are cut back; if maturity be not effected before cutting back takes place, they will not break either evenly or freely. Place them in the full sun in an open situation, but do not all at once withhold water, as that course stops further growth; no harm will, however, be done by letting the soil get dry enough to cause them to flag for a few hours; then give water, and when again dry let them go a little longer before applying any, and in this way, by degrees effect the ripening process of the wood, which in a few weeks will assume a hard brown colour, after which the shoots must be removed to within from three to half-a-dozen eyes of where they were headed back to the preceding year, according to the size of the specimens, allowing the greatest length of shoot to remain in the case of young plants which it is desirable to increase in size. Do not let them get saturated with wet during thunder-storms or continued rains. When there is an appearance of such occurrences lay them down on their sides. Plants that are wanted to be in flower some weeks longer should be well supplied with manure-water, particularly if in small pots, and these very full of roots. What are called fancy kinds push their flowers almost all together, and after the general head of bloom is over they should be cut back; they must not, however, be cut in nearly so close or into the hard wood as the large flowering sorts, or the result will most likely be the loss of the plants; neither will it be well to expose them in the open air in the manner advised for the other kinds; a pit or cold frame, after flowering, will be the most suitable place for them, never subjecting them to such extreme drought as the large-flowered ones will bear. They are equally impatient of too much wet, which is generally the cause of their dying suddenly in a way which they often do. Some well-managed plants of these fancy kinds have been lately exhibited by Mr. James, of Isleworth, grafted on the large-flowered sorts. I can bear testimony as to the soundness of the practice, having tried it myself many years ago, and found them when so grown much less liable than they otherwise would be to die off; the kinds used for stocks should be such as are of medium strength, strong-growing varieties, of which the well-known Rose Celestial may be taken as a representative, do not answer so well as others less vigorous in growth. Plants of these fancies have no doubt been grown on their own roots equal to any that are likely to be forthcoming when grafted, but that has nothing to do with the matter, so long as they can be made to succeed with greater certainty when grafted on stronger-rooted kinds; it is the delicate nature of their roots which cannot bear the slightest excess of water that causes them to die off. Amateurs will find no difficulty in grafting Pelargoniums, as they submit to the operation very readily. I did mine in March, when the grafts and the shoots at the point of juncture were both green, but moderately firm; I merely removed a few of the leaves from both, split the shoots of the stock down the middle a couple of inches, and pared down the grafts wedge-shape to fit, bound them sufficiently tight to hold them secure in their places with bast and kept them a little close for two or three weeks, slackening the ligature as growth required it, and being careful afterwards to remove all shoots that sprung from the stocks below the point of union.

Variegated Fine-leaved Plants, now so much in fashion, are very useful decorative subjects, and there are numbers of them that amateurs who have nothing more than an ordinary greenhouse may successfully cultivate. If the house have Vines on the roof, they will receive much less injury from them than ordinary flowering plants would. Indeed, in hot sunny weather some will rather be benefited than injured by the shade the Vine leaves afford. Amongst the most suitable are the different kinds of variegated Yucca, including the well-known Y. variegata, the smaller-growing Y. quadricolor, and the nearly allied Y. Stokesi, a very handsome sort, with stout leaves less drooping in habit than those of the kinds just named. These will all do well grown in ordinary turfy loam—if of a rich yellow description, all the better; use a good sprinkling of sand with it, and put 2 in. of drainage in the bottom of the pots, and over that an inch of fibrous pieces of the soil; in potting ram the soil pretty firm. Yuccas are slow growers and moderate rooters; consequently they should not have too large pots. When they get well established they will be much benefited by manure-water being given them every week throughout the growing season. The first essential is to obtain plants that are clear from scale, especially the white kind, to which they are very liable, and which get down to the bottom of the leaves at their juncture with the stem, a position from which they are difficult to remove without injuring the plants. The handsome Yucca filamentosa variegata will also succeed under the same treatment, although it does well grown in strong heat. Another beautiful easily-managed plant, that might with advantage be much more extensively grown in both large and small collections than it is, is the Japanese variegated Eurya (E. latifolia variegata); it is a plant which has a free, dense-bushy style of growth, and the leaves are very bright green and white, tinged with red when young, afterwards becoming a rich creamy-white; it is a plant which succeeds well in either peat or loam, the former being the most suitable where it can be had of good quality; the shoots should be stopped now and then whilst the plants are young, in order to induce them to break, but not so much as to give them a too lumpy, dwarf shape. Coprosma Baueriana variegata is another free-growing plant, very suitable for a small house; it does well in a mixture of fibrous loam and leaf-mould; it makes a handsome pyramid, when tied to a stick and occasionally stopped so as to get it to branch out down to the bottom.

Hydrangea argentea variegata and H. aurea variegata are handsome plants, which, as a rule, succeed well in good, ordinary, well-drained loam. They may be struck from cuttings in the spring or summer, and require but little attention afterwards, except cutting out the shoots when they have ceased flowering, so as to keep them bushy, confining the plants to the growths that spring up each season from the bottom. It is a good plan to strike a few Hydrangeas every year, as then the old ones can be discarded when too large. Abutilon Thompsoni is valuable alike for leaves and flowers; in small houses it is best grown from cuttings struck annually and confined to a single stem in 8-in. or 10-in. pots; but, if preferred, they may be stopped low down and induced to break three or four shoots, each tied to a neat stick, or if, after a season's growth, the plants are headed down, they will break up freely, and may be made to produce several shoots in this way. A. vexillarium variegatum, also a fine kind, succeeds under similar treatment; both do well in ordinary loam, being free-rooting plants; they need plenty of water, consequently require a porous soil. The two variegated varieties of Aralia Sieboldi—S. argentea variegata and S. aurea variegata—are handsome plants with ample foliage, very distinct in character. Cuttings of these made from shoots that have sprung from plants that have been headed down, taken off with a heel, will root if placed in small pots in sandy loam in a warm, close atmosphere; they will succeed in either pit or loam, but the colour is brightest in loam, the leaves smaller, with a less disposition to come green. These Aralias should always be confined to a single stem; when they are allowed to branch they become less effective. One essential in their management is that they should be continually turned round in the house or pit in which they are grown, or they get drawn by the light to one side so much as to make the stem crooked, a condition in which they do not look well. Then there are the several variegated forms of New Zealand Flax (Phormium tenax variegatum) that are very desirable plants, and although naturally robust in habit, there is no necessity for getting them to a size larger than can be accommodated in a limited space, as they are plants which readily submit to division. A handsome small specimen, with two or three crowns, may be kept in a 9-in. or 10-in. pot, in which the erect, sword-like leaves stand out in pleasing contrast to other plants of more spreading habit. Any of the varieties—there is not a very wide difference amongst them—succeed well in ordinary loam, to which add a fair proportion of sand. To the above may be added the Chinese Aspidistra lurida variegata, which, although hardy, is one of the best greenhouse variegated plants of moderate growth, usually coming much better coloured indoors than in the open air; it looks best in moderate-sized pots—say such as are 7 in. or 8 in. in diameter—in loam, each plant being confined to two or three crowns. Agapanthus umbellatus variegatus is deserving of a place both for its leaves and flowers; like the green form it will succeed with little attention, merely requiring to be sheltered from frost, and fairly supplied with water; it can be increased by division of the crowns, and does well in common loam. Nerium oleander variegatum can be successfully grown and flowered in 6-in. or 8-in. pots; it is best to strike the cuttings in the autumn, after the growth has been well matured by exposing the plants to the open air, so as to get them thoroughly ripened; the cuttings ought to consist of about 10-in. lengths of the tops of the shoots, and should be struck in a little bottom-heat without submitting the tops to much warmth, or it will sometimes have the effect of causing them to go off into growth; either sandy loam or peat will do for them, keeping them moderately dry during the winter, but not so as to injure the leaves at all, applying more water when growing. The plants can be grown on after flowering, and their tops afterwards taken off and struck; or they can be headed down, and, when started into growth, the soil partially shaken out, replacing with new.

Greenhouses.

The difficulty with which most plant cultivators have to contend at this season is how to maintain a sufficiency of atmospheric moisture under glass to keep the various subjects grown under such conditions healthy and vigorous. The difficulty, too, is rendered all the greater where the house contains both growing and flowering plants, as then the former are necessarily deprived of a syringing overhead, which to them is so essential and refreshing after the exhausting effects of a hot, sunny day. Under such circumstances, it is necessary to make a free use of water so as to thoroughly wet both the under and upper parts of the stage, and every portion of the house available for the purpose. This should be continued more or less frequently, according to the state of the weather and other circumstances, such as the absorbing properties or otherwise of the floors, pathways, &c.; but at this season it can scarcely be overdone, so that there need be little fear of excess. In cases where the under parts of the stages are paved, much benefit will be derived by strewing them with a good depth of shingly gravel, coarse sand, or coal ashes, which, if well watered, will afford a continuous supply of atmospheric moisture as the air passes over them. This may be augmented by a free use of the syringe among the pots early in the morning and just before closing in the evening; under this treatment, young-growing plants will be enabled to make considerable progress, while those in bloom will derive much benefit by being kept fresh and vigorous. Atmospheric moisture is only second in importance to that at the roots, and if changes in either take place too rapidly the plants suffer in health. By affording the requisite humidity in the air, the soil dries much less rapidly than it otherwise would do, and, therefore, the plants derive a double benefit from its use. Many of the hardier greenhouse plants, such as Acacias, Grevilleas, Lomatias, and even Camellias and Azaleas that have made their growth and are sufficiently forward may now with advantage be removed to some sheltered, shady situation, to gradually inure them to the change, with a view of giving them a more sunny position later in the season. This gradual change will prevent the leaves burning or becoming discoloured, which would probably be the case were the plants placed at once under direct sunlight, and, if injured in this way, the effects remain for the rest of the season. Where it can be had the shade afforded by a living screen, such as dwarf trees or shrubs, is always preferable to that of walls or buildings, as it is the soft night air and refreshing dews that enable them to recoup themselves after the exhaustion caused by the heat and aridity of the day. Camellias should be kept well syringed both morning and afternoon, until they become gradually inured to the change, when they may be drawn from under the shelter a little way to enjoy more light and air. Wherever they are placed it should be out of reach of the wind or strong currents of air, both of which would cause a too rapid drying of the soil, and rob them of atmospheric moisture, so essential in their case as regards health. The heavy and frequent waterings which plants necessarily require out-of-doors are sure to attract worms beneath their pots, and unless some means be adopted to keep them out, they are sure to enter and block up the drainage. A piece of slate ought therefore to be provided for each pot to stand on, which by fitting close to the bottom will effectually exclude worms, while admitting at the same time free egress to water.

Stoves.

Roof-climbers, such as Stephanotis, Clerodendron Balfourianum, Allamandas, and Bougainvillea glabra, will now be in full beauty, and should have plenty of light and air, with just sufficient shade to protect them from the strong heat of the sun during the middle part of the day, by which means the colour and texture of the flowers will be greatly improved, and their lasting properties when used in a cut state proportionately increased. The rich yellow of the Allamanda, coupled with its fine form and large size, renders it valuable for dressing low, flat vases, filled with Lycopods, for the blooms to nestle in; and, when associated with the various-coloured Gloxinias, small Cactus blooms, or similar flowers, they produce a striking effect, and last for some time in full beauty. To cut the entire shoot, with its cluster of unexpanded buds, is a great sacrifice; and by simply taking the individual blooms as they expand, and using them in this way, a single plant will afford an almost inexhaustible supply for the whole of the season. All the above-named are very suitable for conservatory decoration, when grown in pots and specially prepared for the purpose by being trained neatly on trellises and properly hardened. Any that have already undergone this process, and are sufficiently forward, may at once be removed to suitable positions, which should be out of reach of cold draughts or strong currents of air. To ensure their safety, keep the plants as dry at the roots as they will admit of, without actually flagging till they get well over the change, as sodden soil with a considerably reduced temperature would have a very prejudicial effect, owing to the comparative state of inactivity of both root and top for some time after their removal. Many plants of tender habit will bear a great amount of cold if kept dry, although they would quickly succumb if subjected to much moisture as well as cold. Coleuses, although now looked on as somewhat common, make good decorative plants when bushy and well grown, a condition in which it is easy to have them where a pit or light compartment of a house can be devoted to their culture. If subjected to the slightest shade they soon become drawn and present a weedy appearance, owing to their being long-jointed and losing those rich brilliant tints that render many of them so highly attractive. To develop these to the full they should have plenty of light with a sufficiency of air during the heat of the day, and be closed early to induce free growth and get them of suitable sizes for the purposes required. Wetting their leaves detracts much from their beauty, and therefore what atmospheric moisture is requisite to aid them in their growth should be applied beneath and around them instead of overhead. Pot them in rich light soil and water freely at the roots as they progress, their quick-growing nature and abundant leafage rendering frequent applications necessary. As soon as they attain sufficient size they may at once be removed to light airy positions in the conservatory, where they will stand for the next two or three months in great beauty. Panicum variegatum, with its beautifully variegated leaves, forms a pleasing contrast to the rich dark colours of the Coleuses when used as an edging to hang over the pots or vases in which they are placed, a purpose for which it is most suitable. A few bits placed round the Coleuses when shifting them will soon grow to a sufficient size and length to make them effective, and pots of it are always useful for furnishing stands in the foreground or for drooping over the sides of stages or shelves. Marantas will soon be at their best, and where wanted for decorating halls or other cool structures, they should at once be gradually hardened off in order to fit them for such purposes. The nature of these plants renders them suitable for standing in positions out of the sun. They are, therefore, admirably adapted for embellishing entrance halls, associated with Ferns or Palms, most of which can be used with good effect in places of that kind. In light dry situations the leaves of Marantas curl or droop, giving the plants an uninviting appearance, from which they do not readily recover, unless replaced in moist, close heat. Any that have been recently divided, or that are likely to be required for succession later in the season, should be potted in rough loose soil, and be well supplied with water at the roots, in order to induce them to develop fine healthy leaves, which they are sure to do, if, in addition, they have the necessary heat and atmospheric moisture. Caladiums, to be really serviceable, should now be subjected to a moderate amount of air and a much cooler temperature than that to which they have been accustomed while growing, otherwise, when they are removed from the close, moist heat of the stove, they will droop almost immediately. Their appearance is improved by the use of a few neat small sticks to support the main leaves, so as to prevent them from overlapping each other.—J. Sheppard, *Woolverstone Park.*

Orchids.

Some of the Mexican Lælias are represented to be rather shy-flowering plants, but that must be a mistake, inasmuch as newly-imported specimens show them to be very floriferous, at least in their own country. The fault is that, with us, they are generally grown in too close and too shady a place. They flower from the tops of the mature growths, and if the latter be not properly ripened through the free admission of light and air, the plants frequently start into premature growth, and the flowers for that season, and probably for the next, are lost. All this section of Lælias has showy flowers; it comprises L. autumnalis, L. furfuracea, L. anceps, and its varieties; L. albida, L. majalis, and the varieties of L. acuminata and of the L. cinnabarina class. L. majalis is perhaps the most beautiful of them all, having flat, pale rosy flowers, each 4 in. in diameter. Mexican Lælias seldom thrive well when grown on ordinary stages in the Orchid-house; but if a small stage be erected for them over the doorway, or in some other convenient place as near the glass as possible, so that they may be all grown on it together, they will be found much less difficult to grow and flower than they usually are. Failing this, they should be suspended from the roof of the house or placed on a shelf. They may be grown on blocks or in baskets; but if the stage just recommended be prepared for them, they should be potted in well-drained pots in fibry peat. Any part of the house shaded by trees during the hottest part of the day is the best place for these plants in summer, and in such a position they will require no other shading; but should such a place not be available, the thinnest shading only should be used, and that should be applied only during the middle of the day, to prevent the plants being scorched by the sun's rays. Care should be taken that a proper circulation of air be maintained at all times. They should be grown

in the intermediate house, and a plentiful supply of water should be given them until the growths have filled out to their proper size, when they should be sparingly watered until the flower-spikes appear, which they generally do in autumn. During the resting season they should be kept cool and rather dry, but they should not be allowed to shrivel. The chief points to insure success in the culture of these plants is to keep them as near the glass as possible, to admit plenty of air, and to exclude as little light as possible. The Brazilian Lælias of the L. purpurata class are stronger plants, and may be grown in pots and placed on the ordinary stage, but a free admission of light is essential, in order to induce them to flower well. The sunniest part of the house should be devoted to them, and the strong-growing Oncidiums, such as O. tigrinum and O. leucochilum, which like similar treatment, should be associated with them.—JAMES O'BRIEN.

Indoor Fruit Department.

Peaches.—Trees from which the crop has been gathered should be syringed on all fine days, in order to keep the foliage clean and healthy until it drops naturally. If the trees and borders be old, let them have a thorough soaking with manure-water, and be afterwards mulched. Where the lights are movable, clean and paint them if necessary, so as to be in readiness for another season. Growing crops should be encouraged by shutting up early with a moist atmosphere, and frequently assisting them with manure-water; syringe them forcibly and freely, in order to prevent insects getting established—in short, any amount of attention should be paid to preserve the foliage in health. Fruits that are ripening should have plenty of air both night and day, and any leaves that shade them should be removed at once. Prevent the fruit from falling to the ground by placing a net or tiffany in a position to catch them. If the crop be heavy, the fruits frequently drop before they are quite ripe, and maturity may at times be effected by placing them in a warm house. If they are to be packed for travelling, they should be gathered a day or two sooner than for home consumption.—J. HUNTER, *Lambton Castle.*

Hardy Fruits.

The present is an unusually busy time in this department, as all small fruits are ripe, or ripening, and require to be picked as soon as ready, or birds make sad havoc among them. All that is to be left for dessert or for purposes of exhibition, should be at once securely netted over, and, even then, mice or rats sometimes sadly injure it, therefore set traps for these in time, as "prevention is better than cure." Previous to netting up Currants or Cherries, see that the trees are clear of aphides, or perhaps when required for use the fruit will be dirty and worthless. The worst infected shoots and leaves may be picked off, and the others well washed with clear water, applied by the garden engine. Strawberries are an excellent crop, and, as soon as gathered, runners should be layered in 60-sized pots, both for forcing and for forming new plantations—that is, if for forcing they have not already been layered, advantage having been taken of the present season's forced plants for that purpose. Ground that is now being cleared of early Potatoes or Peas should be got in readiness for planting them as soon as the runners are well rooted; they will then have time to get thoroughly established, and the crowns ripened before autumn arrives, and will consequently yield a full crop of fruit next season. In dry or exposed situations Raspberries will require deep mulching and watering. A few days of such scorching weather as we have recently had dries them up, and the fruit remains hard, turns brown, and dies off, all of which may be prevented by the timely application of water and mulching, which must be continued (if rendered necessary through the want of rain) after the fruit is gathered, in order to have good canes for next season's fruiting. The weakest canes will doubtless have been thinned out by cutting off or pulling them out long ago; assiduous attention will still be required in the matter of stopping and training in the new growths of all kinds of fruit trees on walls. Peaches, Nectarines, and Morello Cherries may all now have their next year's fruiting shoots tied or nailed in, as the case may be, in doing which avoid the too common error of retaining too many; all should be freely exposed to light. Any secondary growths or sub-laterals which they make must be closely stopped back by pinching with the finger and thumb. Plums and Pears in many instances have set their fruit so thickly that thinning of it is imperatively necessary (I wish I could say the same of all fruits), and it should at once be completed, so that the fruit allowed to remain may reap the full benefit derivable from the thinning ere the growing season is on the wane. Where possible Pears should now be liberally watered, and that with manure-water, as it is when the fruit is about half-grown they require most nourishment, and, as a matter of course, benefit most by its being applied at that time.—W. WILDSMITH, *Heckfield.*

THE KITCHEN GARDEN.

SIMPLE ASPARAGUS CULTURE.

ONE of the errors in Asparagus culture is crowding the plants closely together in the bed. A deep excavation is made, which is filled with rich materials, and the cultivator, in order to get the most of the narrow space which has cost so much labour in preparing, sets the plants so near together that they crowd each other in growth, preventing their free development. We have urged on former occasions the superior advantages of giving less attention to preparing a deep bed, and allowing more space for their growth. The largest plants we ever saw were those that were thus allowed abundant room, with only the common depth of good garden soil. A gentleman whose garden we have occasionally visited, and who knows well how to grow the finest vegetables for his family, gives us the following details of his management of Asparagus:—The plants in the first place are set about 1 ft. deep; the shoots readily find their way to the surface. The rows are 6 ft. apart, and the plants are set 3 ft. in the row. The ground is cultivated and kept clean through the summer. In autumn, after growth has ceased, and the stalks have been cleared away, two furrows thrown apart are ploughed with two horses right over the crowns of the plants. The wide furrow thus formed is filled to a depth of 5 in. or 6 in. with old well-rotted manure, and the soil is then ploughed back, covering it. In alternate years superphosphate is applied at the rate of half a bushel to 50 running ft. in a row, instead of manure—both together would answer well. With this treatment each year, the plants will have attained a full growth in five years, and each plant becomes a stool of shoots fully 2 ft. in diameter. One of these stools has thrown up no fewer than 200 shoots, some of them 1½ in. in diameter. An essential part of the treatment for the preservation of the vigour of the plants, is to cut the shoots for the table only from alternate rows in each year. This prevents exhaustion. In running the deep furrows over the crowns of the plants, as already described, if the crowns or the roots happen to be torn, no harm results, but rather benefit, the plants being at that time in a dormant condition. During the growing season, care is taken not to injure them, and the rows are cultivated with a horse, and kept clean like a common corn-field. This treatment of Asparagus is intended only for family supply; whether it would be the most profitable for marketing has not been tried. The gentleman whose management we have described, informs us that he is familiar with the course which was pursued in the introduction of Conover's Colossal Asparagus, which strongly corroborates the advantages of this wide planting. This sort was set on rich land, the roots being 5 ft. apart each way, and a similar enriching of the ground given each year. The plants assumed colossal dimensions, and a few prominent horticulturists having being induced to visit the grounds, high recommendations followed, and this variety obtained a high name.—"The Country Gentleman." [It is fair to the raiser of this variety of Asparagus to state that in this country, tried under similar conditions with the old kind, it proves distinct, so far as can be judged up to the present time.]

HISTORY OF THE TOMATO, OR LOVE APPLE.

(LYCOPERSICUM ESCULENTUM.)

THE Tomato, or Love Apple, is the fruit of a herbaceous plant, having a hairy stem and rank smell, belonging to the Nightshade and Potato family. It is a native of South America, whence it was early introduced by the Spaniards into Europe, and used as a vegetable. The "Bon Jardinier" (1818) describes the Tomato as coming originally from Mexico; but Sabine, in a paper read on this plant before the Horticultural Society in 1819, said that there is no authority for this statement, for though Hernandez in his History of Mexico mentions it, he does not particularly distinguish it as a native of that country. South America being the native country of this vegetable, it was of course unknown to the ancient Greeks and Romans; still, the name Lycopersicum is stated to have originated with Galen, a celebrated physician, who lived about A.D. 131, but it has not been ascertained to what plant it was given. The name is derived from *lycos*, a wolf, and *persicon*, a peach, implying that the fruit was of such inferior quality, as to be fit only for the use of that animal.

Gesner, an eminent naturalist of Zurich, born in 1516, entered into some investigations of Galen's on the subject, but they did not lead to a certainty, and his opinions are criticised by John Bauhin. Anguillara, an Italian, in a work published in 1561, conjectures that the Lycopersicum of Galen was the Tomato, and on this authority it is said to have acquired in after times the name of Lycopersicum Galeni. In the "Adversaria" of Pena and L'Obel, published in 1570, it is called Poma amoris, Pomum aureum, and Lycopersicum quorundam, in conformity with Anguillara's conjecture.

In the "Elémens de Botanique" of Tournefort, 1694, we find he adopted Lycopersicum as the name of the genus in which he placed the particular plant now treated of. Dodœns, a Dutch botanist, describes this plant as grown in his time in the Continental gardens (see his "Pomptades," published at Antwerp, 1583), and that the fruit was eaten dressed with pepper, vinegar, and oil. It appears by the "Hortus Kewensis" to have been cultivated in England in the year 1596, but it must have been introduced some years previously to that date, as Gerard mentions it in the early part of his voluminous "Herbal" (published in 1597), which must have taken some years in compiling and printing:—This author calls the Tomato Pomum amoris, and says, "Apples of Love do grow in Spain, Italy, and such hot countries, from whence myself have received seeds for my garden, where they do increase and prosper." He also tells us that "there hath happened unto my hands another sort very notable with the former, only the fruit thereof is of a yellow colour." Parkinson, in his "Paradisus," published 1656, says, "that the Tomato grows naturally in the hot countries of Barbary and Ethiopia, yet some report them to be first brought from Peru, a province of the West Indies. We only have them for curiosity in our gardens, and for the amorous aspect or beauty of the fruit." There is no record when this vegetable was first employed as an esculent in this country, but Miller, in his "Gardeners' Dictionary," published in 1752, after describing them, says they were much used in soups in his time. Being a native of hot climates the crop very much depends on the season in this country; when it is favourable large quantities are produced in the open air. As far back as 1818, being a very fine summer, the growth of this vegetable round London exceeded the demand. Mr. John Wilmot, of Isleworth, states that from a crop of 600 plants that season he gathered 400 half-sieves. The fruit on several single plants probably weighed 40 lbs.; some of the Apples were of an extraordinary size, exceeding 12 in. in circumference and weighing 12 oz. each. It is stated that this vegetable, medicinally considered, is an excellent substitute for calomel, and can be taken when that valuable medicine cannot, and with less injury to the constitution (see McIntosh's "Book of the Garden.") In France and Italy whole fields of this plant are cultivated; so great is the demand in some parts of the latter country that there is scarcely a dinner served up in which it does not in some way or other form a part. In England the plant is more cultivated than formerly, and there has been of late an importation of this vegetable from the United States preserved in tins. In a course of an extensive series of chemical experiments on plants by E. Solby, he found that the leaves and stems of the Tomato contained nitric acid. It is stated in the "Gardeners' Magazine," vol. x. (1834), that Tomato buds may be grafted on Potatoes, and plants thus treated produce good crops of both vegetables. The old European botanists wrote the name of this plant Tumatle. The Spaniards and Portuguese call them Tomates, which appears to be the original Peruvian appellation, and in Mexico this and several plants of the Solanum genus are called Tomatles. There are several varieties of Tomatoes known by the form and colour of their fruit. Duval, in his "Natural History of the Solanum," notices their distinctive characteristics, and describes each as a distinct species; but it is believed that they can all be referred to a common type, viz., the large Tomato, with deeply-divided, rough, hairy leaves and clusters of yellow flowers succeeded by large-lobed fruit of an orange-red or scarlet colour when ripe. Dr. B. Seeman, in his "Flora Vitiensis," or the description of plants in the Fiji Islands, mentions Solanum anthropophagorum (the Cannibal's Tomato), called Bogodina, being one of the plants which Fijians cultivate very near Bureni-sa, or Stranger's House, where the bodies of the slain in battle are always taken to be feasted with the fruit of this plant.—"Science Gossip."

Best late American Potato.—Out of eight varieties of American Potatoes grown here last year, I find the best for use at the present time to be the Eureka. I had so poor an opinion of this Potato that I did not plant it this season—an omission that I now regret, seeing that its qualities are so good as a late keeper. When mashed and served with a little cream or butter, it has a pleasant and agreeable taste, different from the earthy flavour so characteristic of American Potatoes in general. Apart from this the Eureka has other good qualities to recommend it; besides being white-skinned, it is firm in texture the haulm is strong and erect, and the tubers cluster closely round the stem. After weighing my crop last year I found the average weight per stem to be 8 lbs. The Beauty of Vermont and Compton's Surprise, growing on the same plot, only yielded 5½ lb. per stem, and Snowflake 5 lb. The whole of the above-named varieties were grown in the ordinary way—namely, in rows 2 ft. apart. Here the Early Rose yields about 7 lb. per stem, grown in the same way.—J. THOMSON, *Shawdon.*

CROPPING FOR WINTER.

FROM May till September is a period of the year of which, according to a writer in the "Field," cultivators should make good use, or they will be short of many things which are needed most between Christmas and June.

Broccoli.—This is one of the most important of winter crops The summer Cauliflower does well if it lasts till Christmas, which in tolerably mild autumns and early winters it sometimes does with the aid of the Walcheren—the hardiest of its class—Grange's Autumn Broccoli, and Veitch's Giant, and a little attention in the way of protection; but it is most commonly over before November is out, and then we look for the Broccoli coming in to carry on the supply till next midsummer. Notwithstanding successional sowings and planting, however, Broccoli cannot always be got to come in so regularly at any time as to prevent blanks occurring in the supply: everything depends on the weather, after all. If the temperature keep above the growing point the plants will grow apace, and keep dropping in slowly; but if the thermometer drop sensibly below 40°, and remains so, the supply will come to a standstill without doubt. We cannot say that sowing at any period between February and the middle of April, in a late district, ever gave us heads either earlier or later in the winter, for we have paid attention to the matter often. The wisest course is to select a goodly number of varieties, which should comprise the best and hardiest only, from the very earliest to the latest, and a dozen sorts will do this. The next point is to sow thinly, not later than the end of March, and to plant out from the middle of May till the end of June in late situations, and till the end of July in more favourable districts, putting the earliest varieties out first. This is allowing a pretty wide margin as to time; but we may state that, though we have had tolerable heads from plants put out in August, and many cannot get the work of planting done before then; still, we always contrive to get all finished by the end of June, and all the varieties are planted at the same time. If the weather be dry at planting time and for a while after, time is lost, for the plants hang fire so long before they begin to grow. Much, however, depends on planting. If the plants be got up carefully, with long top roots, and if these be let straight down into a good deep hole made with the dibber, and one thorough watering given at the finish, there is not much to fear. In warm growing seasons we have had young Broccoli plants with roots 12 in. or 18 in. long before they could be attended to, and they were planted thus:—A man with a broom-handle went along and made the holes deeper and wider than required, and another came behind and put them in and filled up. These plants always did well, and made giants before winter. The Broccoli likes a deep rich soil, but it may be of a very loose character. Trenching, deep digging, and manuring of the ground is almost executed if it has been occupied by any of the Brassica tribe just before. When Broccoli begins to head and come in in a regular way, the supply is often greater than the demand. When this is the case, the heads should be cut with a good quantity of leaves to them, and set in sand in a cool, dark shed or behind a north wall, with a mat spread over them, or they may be put into the ice-house. Here we have kept them for a month but after ten days or thereabouts they begin to taste when cooked.

Brussels Sprouts.—If the ground be clear, these cannot be planted out too soon. The longer the period of growth they have, the taller they will be and the more Sprouts they will bear. If very large Sprouts are desired, then high culture, as for Broccoli, will be necessary, and the kinds which produce the largest Sprouts must be grown, such as the Dalmeny and Dalkeith; but with high-class cooks, and those who like to produce artistic dishes, the small hard Sprouts are preferred, as being most useful, and because they cook whole and green; large and loose ones, divested of their outside blades, are faulty in these respects. A distance of 2 ft. or 2½ ft. is enough between the plants when put out in good time, but the shorter the season of the growth before them, the thicker they should be planted.

Savoys.—This excellent winter Green is preferred to Cabbage, and is much esteemed in some places. Its sprouts, which grow after the heads are cut, are not so useful, however, and cooks do not care

o use the Savoy at all seasons of the year like the Cabbage. Only after it has received a touch of frost is the Savoy considered in season, and it is good to use it in early winter while it lasts, for the heads suffer sooner from frost than either the Brussels Sprout or the Cabbage. For bulk of crop, the old and somewhat coarse Drumhead is the best, but for better garden crops, the Dwarf Green and Early Ulm are among the best, being early hearters, and tender and good. These kinds may be planted almost as closely together as Dwarf York Cabbage, and they will heart, though put out as late as the beginning or middle of August even in the north, but a month earlier enables them to produce larger and firmer heads. The Savoy likes liberal treatment like the rest of its tribe.

Cabbages.—As to these, a good breadth planted late in autumn or early in spring should—between the first cut heads and the hearted sprouts which they bear afterwards—carry the supply well through the summer and winter; but, as a precaution, a sowing should be made in July or August of any of the early dwarf kinds, and also of the early Enfield, to succeed the first lot. It is well to have a good supply of tender Cabbage in the winter months.

Curled Greens.—These are not the least important of our winter crops. They are run upon when others fail, and are always in demand from the beginning of winter till near the end of June. "Be aye stickin' in a tree" was Dumbiedyke's advice to his son; and we would say, "be always putting in Greens as long as you have any spare ground to fill." There are always plenty of families ill-provided with vegetables during winter who are thankful for a "boiling" if they can get them, and it is wrong to waste them, as is often done, simply through letting them run to seed. In the servants' hall they are very acceptable, and the fresh young sprouts in spring come in handy also for packing the London hampers instead of dead weight. It is not necessary to manure highly for Greens, but the ground should not be too poor. Still, we have planted the same ground for years in summer with Greens, giving them only the leavings of the manure-heap, and have never had reason to complain of an ill crop. It is seldom that the planting of them can be done before August, and we continue to put them in till September, as Potatoes and such like crops are cleared away. It may just be mentioned that there is no vegetable of the kind of which more is sold, and sold profitably, than Greens, especially in the provincial towns and their neighbourhoods. Hawkers carry them far and wide for sale in the populous districts in the north of England.

Winter Turnips.—A good supply of these is a great desideratum during the winter and spring months. It is difficult to gauge the exact time to sow, but, making allowance for difference of climate, the main winter crop should be got in between June 20 and July 20, sowing earliest, of course, in late districts, and later in the south and in early localities. Two sowings, however, are best, allowing a fortnight between them, and then a good standing winter crop is almost certain. Winter Turnips should not be above half grown when winter overtakes them, as they then stand frost and alternations of the weather better. Mature, full-sized roots are the first to give way. Moderately rich ground and a deep litter should be afforded them; and when the plants are past all danger from fly, they should be thinned out to 2 ft. apart each way if sown broadcast, and if in drills, which is the best plan, the rows should be that distance asunder. Turnips which are thick on the ground never stand the winter well. Some people sow a later crop between the first and last weeks of August to succeed the first, but such a crop should not be trusted to. They may form usable little bulbs in spring, but the chances are that they will never come to anything, and run to seed the first thing when growth commences. Behind a north wall is a good situation for a winter crop of Turnips, as they are always in the shade during the short days, and not being so often frozen and thawed, they last better. Chirk Castle is by far the best variety for winter, being very hardy, white-fleshed, and good.

Winter Spinach.—To afford constant pickings of this excellent vegetable throughout the winter, a greater breadth of it must be sown than most other things, as it does not grow fast enough to keep up the supply. The object should be to get the plants to that stage when they are about going to seed, before they cease growing. At this stage they have their first good leaves, and they are in a condition to stand the winter, and are sure to produce plentifully next spring, and onwards till the end of May, well overlapping the early spring sowings. To produce these results sowing should not be delayed beyond the middle of August, and it is often necessary to sow a fortnight earlier than that, but, like the winter Turnips, two sowings had better be made if the ground can be spared. Spinach likes a deep, rich, and rather light soil. Decayed vegetable litter or stable manure well rotted suits it well, and the manure should be trenched or deeply dug into the ground. Winter or prickly Spinach is the kind to sow. Eighteen inches between the drills is wide enough for the winter crop, and the seed must not be covered in more than an inch deep. When the seedlings are fairly up they should be thinned to 3 in. or 4 in. between the plants, and afterwards the surface of the ground should be stirred with the hoe. In picking for use the bottom and oldest leaves should be gathered, and the younger left to grow for successional pickings.

THE SUGAR BEET AND ITS VARIETES.

Messrs. Vilmorin, Andrieux, & Co. have recently issued a circular, in which they give the following particulars concerning the Sugar Beet and its varieties:—During the last twenty years the improvement of the Beetroot has never ceased to occupy the attention both of Beetroot growers and sugar manufacturers, to whom it is one of the most important questions of the day. It must, however, be remarked at the outset, in order to put the matter in its proper light, and avoid all misunderstanding, that the ideally perfect Sugar Beet is essentially different according to the country and conditions of its production. In places where, as in Germany, a tax is levied on the amount of Beetroots worked up, or what is the same thing, according to the capacity of the hydraulic presses, as in Russia, the rich roots which contain a large proportion of sugar in a small bulk obtain the preference, as is natural. In France, on the other hand, fixed custom, the nature of the rotations established between the manufacturers and growers, the important part played by the spent pulp for feeding purposes, all unite in favouring the choice of heavy roots of medium richness. There is reason, too, in this preference, for the varieties which grow into heavy roots are just those which give the largest amount of sugar per acre, although the yield of each individual root is less. For instance, we have rarely seen the German varieties, or even the Improved Vilmorin, give as heavy a figure of production for the same area as the Collet Rose variety. It is a generally admitted fact that the different varieties of Beetroot are rich in sugar in inverse ratio to their bulk. Taken in its general meaning this proposition expresses a profound truth, but it is also certain that judicious selection can vary this ratio and enrich a given variety of root in sugar without increasing its bulk. It is in such modifications as these that we must seek for the practical improvement of the Beetroot; in fact, the point to be aimed at is the creation of a series of varieties which would give a maximum of richness in sugar, but only in conjunction with a maximum of size characteristic of each particular variety. It would of course be vain to try and grow a Beetroot which would give both maxima at their fullest height; the sooner, therefore, that such an idea is abandoned the better chance will there be of avoiding mistakes and useless researches. Great saccharine richness must necessarily be allied with abundant foliage and rootlets, and those varieties which are rich in leaves and rootlets cannot become large without losing the outward qualities of regularity and neatness, which are in a great measure indispensable to a good strain of Beetroots. Starting, then, with this point in view, that the different circumstances under which the consumer and producer find themselves placed, necessitates different varieties of Beetroots, let us examine the varieties actually known, and see what they may become under the influence of the principle of selection properly applied. The White Sugar Beet of Silesia, which is the origin of all the others, is still preferred throughout the greater part of Europe; the root is of medium size, almost entirely buried, with a white, slightly rough skin, the foliage being spread out rather than upright. It is rich in sugar, yielding generally from 12 to 14 per cent., and, under favourable circumstances, 45,000 kilos. per hectare. It will grow well even when crowded together, and does not require a very deep soil. It has been cultivated in France for many years, and has gained in size, yielding easily 50,000 kilos. per hectare. At the present time, when varieties rich in sugar are eagerly sought after, the Acclimatised White German (fig. 1) is one to be most highly recommended. There are also several sub-varieties which have been obtained by selection, amongst which may be mentioned the Magdeburg, somewhat small, long, and very regular; the Breslau, which is shorter and thicker; the Impériale (fig. 2), first grown by Knauer, which is long, tapering regularly in the form of a Carrot, with light curly foliage drooping on the ground; and the Electorale of the same grower, which is thicker, larger, and more productive, but not so rich in sugar as the Impériale.

The Green-topped Sugar Beet (fig. 3), which is of French origin, is at present much less in vogue than it was fifteen years ago. It is, nevertheless, an excellent variety, larger, better made, and smoother than the Silesian Beet. The top, which rises above the ground only 2 in. or 3 in., is tinged with green; the root is long, smooth, and white. This variety will give as much as 60,000 kilos. per

hectare, and from 11 per cent. to 14 per cent. of sugar. Manufacturers who have continued to cultivate this sort have every reason to be satisfied with it. In one case it yielded 8288 kilos. of sugar per hectare. The French Red-topped Beet (fig. 4) has been a favourite variety for many years past. Its fame is fully justified by a number of qualities, which seem to place it in the most advantageous position of all, that is to say, under the ordinary conditions of Beetroot

Fig. 1.—White German.

Fig. 2.—Impériale.

culture in France. It is of vigorous habit, which enables it to yield as much as from 70,000 kilos. to 75,000 kilos. per hectare. Its shape is generally regular, and its richness in sugar varies from 10 per cent. to 13 per cent. In addition to its other good qualities, it keeps well. The foliage is strong and abundant, the crown just rising slightly above the surface of the ground, so that it may be easily

Fig. 3.—Green-topped.

Fig. 4.—Red-topped.

pulled up without the saccharine quality of the root being deteriorated. The largest yield of sugar per hectare from this variety was 8881 kilos. The Grey-topped Beetroot (fig. 5), or the Northern Reddish-grey, is the most productive and perfectly-shaped variety of all. The foliage is somewhat scanty, and about a quarter of the root is above the ground. This portion of the root is grey, greenish, or brown, and is smooth and even like the part below ground, which is more or less reddish. On the other hand, it is the least rich in sugar of all varieties of Beetroots; and it is now-a-days entirely out of favour with most sugar manufacturers. We believe the sentence to be somewhat severe, for the Grey-crowned Beetroot is capable of yielding, with proper culture, an amount of sugar per hectare that would rival those of the two other varieties just mentioned; and we believe that it could be sensibly improved in the way of yielding an increased amount of sugar without losing its qualities of form and size. Vilmorin's White Improved (fig. 6) is the direct offspring of the Silesian White. M. Louis Vilmorin, by careful selection through several generations, has, as it were, compelled this variety to yield from 15 to 18 per cent. of sugar, a standard to which it has now kept for several years. Experiment has shown that it would be hopeless to try and obtain a still greater yield of sugar, for the plant would then cease to grow with sufficient strength. Efforts have been successfully made of late to improve the shape and increase the productiveness of this new variety, and important progress has been made in these directions. At the commencement the production per hectare was 20,000 kilos. to 25,000 kilos., yielding 15 to 16 per cent. of sugar, but during the last few years the production per hectare has mounted up to from 40,000 kilos. to 45,000 kilos., with a yield of sugar of from 15 to 18 per cent. This variety has always been considered to suit the special conditions of manufacture and culture as carried out in other countries besides

F.g. 5.—Grey-topped.

Fig. 6.—Vilmorin's Improved White.

France, but seeing the modifications which it has undergone during the last few years with respect to its increased size and production, it might in many cases be adopted by French growers and manufacturers. By planting closely the disadvantage of the smallness of its size, as compared with other varieties, is got over, while, on the other hand, it has been proved by numerous analyses, more especially at the Arras and Senlis shows, that this variety surpasses all others, not only in the yield of sugar but in the purity of its juice, which contains less ashes and salts than any other, an advantage of the very highest importance. The above are the characteristics and merits of the various sorts of Sugar Beets as cultivated in 1875. It is no longer doubtful, therefore, that new races can be obtained, and that existing varieties can be improved; but it is easy to perceive from what has just been said that we possess varieties of Beetroots which are adapted to the most diverse conditions of soil and climate, as well as to the most opposite modes of cultivation and manufacture. To attain this desirable end it is simply sufficient to be well acquainted with all the different varieties, and to know how to employ them at the proper occasions.

The Shoots of the Brake Fern Edible.—The young shoots of the Br Ferns, are, according to M. Louis Böhmer, much prized by the Japanese as an article of food; the fronds are gathered when still undeveloped and used in soups, &c.

WOOD PAVEMENTS THE WORST.

THE Americans know better than we can know the precise value of wood pavements. For the past ten years or more they have tried this form of pavement in all their principal cities; with them the material is not only abundant, it is cheap; in comparison with ourselves, so far as wood is concerned, they could, if it pleased them, pave their principal streets with that material almost for nothing; and yet, in the most decided manner, they have, after a much longer experience than our own, rejected it unanimously. Some time ago the Commissioners of Sewers in London addressed a letter to the Commissioners of Works in New York, asking them to favour the London Commissioners with a report of their experience of wood pavements. The reply was most distinct and emphatic. It says:—"In thoroughfares subjected to heavy traffic the best of wooden pavements are almost useless." "Very many complaints are made of the offensive and unhealthy effluvia emitted from them, and also of their being in many places unfit to travel over." "Various preparations of the wood have been tried within the last ten years, but all have failed." "Wood pavement is very expensive to keep in order." It has, we are further told, been decided in the law courts of the United States that a municipality is liable in damages for injuries to persons or property by accidents caused by the unsafe condition of highways; and it was specially reported to the municipality of New York that very much of the wooden pavement in that city would, within a brief period, be reduced to a dangerous condition, unless properly repaired or repaved. This fact was also reported to our own Commissioners of Sewers, and yet, notwithstanding so explicit a condemnation, the same pavement is being put down in London. The Lord Mayor has, we believe, caused a portion of the best of our pavements to be removed in the City, in order to make room for this cast-off pavement of our shrewd American cousins. Surely London is of sufficiently national importance to justify the scientific and reliable determination of a question which is of such vital moment as—Which is the best pavement for the promotion of its health, its cleanliness, and its appearance? While the principal street in Washington is at this moment having its wood pavement taken up and the Val-de-Travers compressed rock pavement is being put down in its place, we in London are superseding a portion of our Val-de-Travers pavement for the rotten and exploded American wood blocks. It is a case that should call for a strict investigation.

It is right that we should supply all the evidence in our power on this matter of wood pavement. The following is an extract from a publication of the Hygienic Society of France, and is from the pen of the Chief Officer of Health in Paris:—"The science of public health," he says, "cannot regard with a friendly eye a street pavement composed of a porous substance liable to become impregnated with organic matter, and exhaling by its own decomposition miasmas which, from the large surface over which they arise, cannot be considered as insignificant. I am convinced that a town, with a damp climate, entirely paved with wood, sooner or later would become a town infested with marsh fevers. The experiments with wood pavements have happily proved a failure, and the system appears condemned past all hope."

We are glad to learn that great progress has been made in the compressed rock pavements in various parts of the metropolis. More than 200,000 square yards of this invaluable pavement have been laid down. There are now as many as seventy-nine noiseless streets in London, which are easily cleansed, which make no mud in winter, and are without dust in summer, which add not only beauty to the town, but unquestionably much health and comfort to many thousands of its inhabitants. One of the chief means of making London the fairest city of the world is a pavement that can for ever be kept clean.—"Examiner." [We have watched with some interest the wood pavement being laid down in London, and with regret, convinced as we are that wood pavement, as compared with macadam or good asphalte, is costly, worthless, and exceedingly offensive, both in the process of laying down and afterwards. One point has been much talked of, the comparative freedom from danger of wood as a pavement. In Piccadilly, however, where it has been recently laid down we frequently notice that when wet in the morning after rain, or even after the water-carts, it is more slippery and dangerous than asphalte. The odour of the material continually wearing away is also a permanent nuisance, and the road in every way, as it seems to us, inferior to macadam. We therefore recommend all interested in making noiseless and good roads, to consider well before adopting this material. It is condemned already by those who know it, but its worthlessness as a road material will not be generally seen until it gets into a decomposed condition.—ED. GARDEN.]

Lawn Daisies.—Can any one inform me if there be any way of clearing a lawn from Daisies, except by laying the whole down anew?—INQUIRER.

SOCIETIES AND EXHIBITIONS.

CRYSTAL PALACE ROSE SHOW.

JUNE 30 AND JULY 1.

THIS exhibition, although a successful one, was not so large as it would have been had the season been more favourable, and in the majority of the collections shown perfect blooms were the exception rather than the rule, more especially in the classes devoted to Hybrid Perpetuals. Mr. Cant, of Colchester, had the best blooms in the three principal nurserymen's classes. Messrs. Paul & Son, of Cheshunt, and Mr. Charles Turner, of Slough, had also excellent stands in the nurserymen's classes. One of the most noticeable points connected with the exhibition was the beauty, variety, and freshness of the Tea Roses, the best of which came from Messrs. Paul & Son.

New Roses.—Amongst these the following were in excellent condition:—

H. P. Marchioness of Exeter (Paul & Son).—This is one of Mr. Laxton's seedlings, and is a finely-shaped, full, globular rose, and a welcome addition to existing kinds. The colour is clear rose, with silvery-lilac backs to the petals.

H. P. Emily Laxton (Paul & Son).—This, which is another of Mr. Laxton's seedlings, has bright rosy petals of exquisite smoothness. It is a distinct Rose, but not equal to the last as an exhibition variety.

H. P. Cheshunt Hybrid (Paul & Son).—A first-class crimson-purple variety now well known.

H. P. Duke of Connaught (Paul & Son).—A full, velvety-crimson Rose, flushed with scarlet. It is a robust, English-raised seedling, and the best of its class.

H. P. Robert Marnock (Paul & Son).—A velvety-crimson variety of average merit.

H. P. Mrs. Baker (C. Turner).—A crimson-purple variety, having a full fiery centre.

H. P. Oxonian (C. Turner).—A full rosy-carmine variety, exquisitely cupped when perfect, and distinct from all others in colour.

H. P. Miss Hassard (C. Turner).—A well-shaped Rose of a delicate lilac colour, having a rosy-flushed centre. As shown on this occasion, it promises to be well worth a place among light-coloured kinds.

Hybrid Perpetuals.—In the large open class for seventy-two blooms, Mr. Cant, of Colchester, was first. Prominent among his varieties were Duchess of Edinburgh, peach; the well-known Gen. Jacqueminot, fiery crimson; Captain Christy, one of the best of new Roses, of a rosy flesh colour; Thomas Mills, crimson-scarlet, a very fine bloom; Louis Van Houtte, crimson; La France, one of the most chaste of all rosy-lilac varieties; Maréchal Niel; Senateur Vaisse; the delicate pink Souvenir d'un Ami; Mons. Etienne Levet, fiery-rose; Souvenir d'Elise, a finely-shaped, creamy-tinted Tea; good blooms of Marie Baumann, rosy-crimson; John Hopper; and the smooth-petaled, crimson-purple Dupuy Jamin. Messrs. Paul and Son, of Cheshunt, who were second, had also fine flowers, but they lacked the freshness and beauty of those just named; among them were fine examples of Maurice Bernardin, bright crimson; Baroness Rothschild, peach; Princess Beatrice, rosy-lilac; Rev. J. B. Camm, a full fiery-rose, having close, revolute petals, well worth growing for its odour alone. In the same group were good blooms of Edonard Morren, peach; Dr. Andry, crimson, with smooth petals; Ferdinand de Lesseps, crimson; Hippolyte Jamin, peach; Mrs. C. Wood, fiery-crimson; Madame Lacharme, white; Centifolia rosea, Marie Baumann, Abel Grand, François Michelon, and others. Messrs. Cranston and Mayo, Messrs. Mitchell and Sons, Mr. George Prince, Mr. Keynes, and others, exhibited in this class. In exhibitions of forty-eight varieties, three trusses of each, the competition was closer; but again Mr. Cant was first, and Messrs. Paul & Son and Mr. C. Turner second and third, the varieties being, with few exceptions, the same as those just named. In class three (24 varieties, three trusses of each), the prizes were awarded to the same exhibitors, but in this instance Mr. Turner was second, and Messrs. Paul & Son third. In the amateurs' classes some good stands were contributed by Mr. Rushmore, Tenaring Hall, Colchester; Mr. Nicoll, Drinkstone Park; and others. Messrs. Paul & Son furnished a beautiful group of pot Roses, each of which bore from five to twelve blooms, the plants themselves being little over 1 ft. in height. Among the varieties we remarked Princess Beatrice, peach; Maurice Bernardin, crimson; Duchess of Edinburgh, rose; Madlle. Marie Finger, a delicate rosy variety, with smooth, shell-like petals; La France, Madame Lacharme, Fisher Holmes, Marie Rady, and the rosy-lilac variety named Madame Nachary. Excellent stands of single kinds, twelve blooms of each, were shown, the varieties being Captain Christy, a pale rosy variety, flushed in the centre with a deeper tint; Marguerite de St. Amand, a smooth-petalled variety of a pure rosy-lilac hue; Annie Laxton, as shown by the raiser, Mr. T. Laxton of Stamford, was awarded an extra prize; and, close beside it, Mr. Curtis, of Chatteris, had a superb stand of the fiery-crimson Marie Baumann, in its way one of the best of all Roses. We also noted very good stands of the crimson-purple Duke of Edinburgh and Etienne Levet; while Mr. Rushmore's stand of the white Madame Lacharme was as chaste and perfect as the most fastidious could desire.

Tea-scented and Noisette varieties.—Rarely, if ever, have we seen Tea Roses shown, as a whole, in such good condition as they were on this occasion, although in the case of some individual varieties there was a falling off in quality. For example, there were no blooms of the ivory-petaled Niphetos in any way equal to those which were shown at the corresponding exhibition last year, and nearly all the flowers of Maréchal Niel looked flaccid and colourless compared with what we have seen staged here. In the special class for Tea-scented varieties Messrs. Paul & Son were first, second and third prizes being awarded to Messrs. Veitch, of Exeter, and Messrs. Davison & Co., of Hereford, who had also very good stands. Among the varieties which struck us as being both beautiful and distinct, we noted Homère, a well-formed, creamy variety, the tips of whose petals are suffused with lilac-purple; Niphetos, which, when well grown, is one of the finest of all white Teas; and Devoniensis, creamy-white, flushed with rose in the centre. Conspicuous among the paler varieties were Cheshunt Hybrid, deep rosy-carmine, inclining to purple; and Duchess of Edinburgh, another dark variety, well worth a place among the more faintly-tinted kinds. Marie Van Houtte, sulphur edged with rose, and the flesh-tinted shell-like Souvenir d'un Ami were likewise conspicuous in general stands; as were also Bougère, flesh; Perle des Jardins, sulphur; Souvenir d'Elise, white edged with rose; and Madame Margottin, another delicate variety of a creamy-white colour, having a full, sulphur centre. A lovely, flesh-tinted variety, called Rubens, was well shown in several stands, and well deserves a place wherever Tea Roses are appreciated.

Dinner Table Decorations and Bouquets.—These were well represented, and among them were several tasteful arrangements. In the open class Mrs. W. Seale was first with a light and gracefully-decorated table, the principal flowers used in this case being White Roses, Vallota, and crimson Dipladenias, white Water Lilies, and coral-coloured Begonias. Mrs. Burley, of Brentwood, was first in the ladies' class; her arrangement consisted of a central Palm (Cocos Weddelliana) and two trumpet-shaped vases, one at either end of the table. These were tastefully filled with white and rosy Rhodanthe, wild Grasses, long strips of Pampas Grass, and pieces of Saxifraga sarmentosa, the base consisting of fresh, green, Maiden-hair Fern, enlivened with Water Lilies, flowers of Gladioli, white and blue Corn-flowers, and a few choice Orchid blooms. The base of the central Palm was fringed with Ferns, on which lay white Water Lilies, crimson Cereus, white Pancratium, and pink Gladiolus flowers. One of the softest and most perfect pieces of colouring in the whole exhibition was Mrs. Seale's table, to which a second prize was awarded; it consisted of three trumpet-shaped vases, and little glass baskets filled with living Sphagnum Moss, and water in which small Ivy leaves and bright blue Forget-me-nots had a charming appearance. The central vase was furnished with Feather Grass, blue Larkspur, and a spray or two of mauve-coloured Bougainvillea, while the base consisted of delicate wild Grasses, blue Larkspur and Water Lilies, pink Pelargoniums, and Roses, tastefully fringed with Adiantum, Selaginella, and other verdant foliage. The end vases were filled with Maiden-hair Fern and Selaginella, the latter hanging over the rim, and a few pink and white Rhododendron flowers, and a brown Everlasting or two were added with excellent effect. The sprigs of Maiden-hair Fern and leaves of Herb Robert in the little cornucopiæ were lovely; and, taken altogether, the soft hues of rose, blue, brown, pink, and sulphur-yellow blended, as they were on this table, with the tender green hue of young Ferns, constituted a most successful arrangement. Mr. W. Soder obtained the prize awarded for a vase of Roses, and Mr. Hepburn took the first prize for button-hole bouquets with a pretty combination of Maiden-hair Fern, white Bouvardia, white Tea Rose, and a sprig of Hoya carnosa. Mr. Hepburn also obtained an extra award for a group of floral wreaths for the hair, button-holes, &c., formed of Maiden-hair Fern, Orchids, scarlet and white Bouvardias, Forget-me-Nots, and Tea Roses of different colours. These were staged on black velvet, the effect of which was too sombre; crimson velvet would have been better for such a purpose. Mrs. L. M. Chater, of 40, Denmark Hill, furnished the best wedding bouquets, in which we remarked double Tuberoses, Gardenias, Tea Rose-buds, white Bouvardia, Rhynchospermum jasminioides, and small flowers of the Snowy Lady's Slipper (Cypripedium niveum). Mr. C. Hepburn obtained the premier award offered for an opera bouquet, but it was ill-shaped and heavy-looking.

Miscellaneous Subjects.—A new Fuchsia, named Laing's Hybrid, was exhibited by Mr. J. Laing, of the Stanstead Park Nursery, Forest Hill, who also showed examples of the old striped York and Lancaster Rose, and the little Pompon variety called Rose de Meaux, which is one of the prettiest of all Roses for bouquets or button-holes, its delicately tinted flowers being little larger than a shilling, and supported by dense Sweet Brier-like foliage. Mr. R. Parker, of Tooting, showed a splendid collection of rosy-flowered Pyrethrums, Delphiniums of all shades of blue, and cut flowers of English and Spanish Irises, together with Pinks, Funkias, Corn-flower, and specimens of the glaucous-leaved golden-flowered Tropæolum polyphyllum. The same exhibitor had also several showy stands of cut Peony flowers, the colours being white, lemon-yellow, pink, rose, and crimson. A group of Clematises came from Mr. Maurice Young, the principal varieties in which were C. rubro-violacea, maroon; C. Jackmani, purple; C. rubella, reddish-purple; and one or two forms of C. lanuginosa.

Lucas Strawberry.—This fine early kind has the habit and character of Keen's Seedling. It bears abundantly, and the fruit is large and of the true Keen's type. It is rich in colour and first-rate in flavour. Mr. Barron, of Chiswick, considers it to be one of the finest of all Strawberries.—D.

ROYAL AQUARIUM ROSE SHOW.

JULY 5 AND 6

ROSES were well represented at this exhibition, the blooms sent for competition in the leading classes being especially good in quality. Messrs. Cant, Paul, and Turner contributed excellent collections in the nurserymen's classes, and Mr. R. N. G. Baker and Mr. Nicoll, of Drinkstone Park Gardens, had fine blooms in the classes devoted to the exhibits of amateurs. Tasteful dinner-table decorations were furnished by Mr. C. Burley, Mr. Cypher, Messrs. Dick Radclyffe, and others; but the size of the tables was much too small for fourteen persons, as stated in the schedule; hence most of the arrangements had a crowded appearance. Well-grown specimen Fuchsias came from Mr. Weston, gardener to J. Martineau, Esq., Clapham Common; and Mr. E. Morse sent a charming stand of cut flowers.

New Roses.—In the class for twelve new Roses of 1874, 1875, and 1876, Mr. Charles Turner was first with Perle des Jardins, sulphur; Rev. J. B. Camm, full rose; J. S. Mill, rosy-crimson; Comtesse de Serenyi, blush; Mrs. Baker, purplish-carmine; Royal Standard, rosy blush, a very full Rose; Oxonian, carmine; William Gater, crimson; Sir Garnet Wolseley, crimson-scarlet; Miss Hassard, blush; Antoine Mouton, purple-lilac; and Villaret de Joyeuse, carmine. Messrs. Paul & Son were second in this class. For six trusses of any new Rose of 1874, 1875, and 1876, Mr. Cant was first with Prince Arthur, a full-petaled crimson variety; Mr. Turner was second with six fine blooms of Miss Hassard, a full-petaled rosy blush; and Messrs. Paul & Son were third with Emily Laxton, a good full rose. A new pink variety, named Ægeria, came from Mr. Bennett, of Stapleford; it is similar in form to Peach Blossom, but brighter in colour. In the class for seventy-two Roses, single trusses, Mr. Cant, of Colchester, was first with fresh and lovely blooms among which we noted Miss Hassard, blush, in the way of Peach Blossom; Louis Van Houtte, fine velvety-crimson; Baroness Rothschild, blush; Niphetos, a creamy-white Tea; La France, Princess Beatrice, and others equally good. Messrs. Cranston and Mayo were second with good blooms but somewhat deficient in size. Messrs. Paul & Son were third with a very creditable group, in which we noted good blooms of Marie Finger, lilac, with a rosy-salmon centre; Madame Therese Levet, very fine blush; Catherine Mermet, a creamy, Tea-scented variety, tinted with rose; and splendid flowers of Louis Van Houtte and of Marchioness of Exeter, one of the best of this year's seedlings. All the blooms shown in this class were above the average in quality, and among others especially noticeable were Annie Laxton, a full, rosy-lilac variety; Horace Vernet, fiery-crimson; Caroline de Sansal; Madame Vidot, still one of the best of its class; and Edouard Morren, a globular, bright rosy variety. In the class for forty-eight varieties, three trusses each, Messrs. Paul & Son were first with very fine blooms, among which the following were conspicuous, viz.:—Marie Baumann, crimson; Marguerite de Gibot, bright rose; Mrs. Charles Wood, fiery crimson; Annie Laxton, soft rose-lilac; Duke of Wellington, velvety-crimson; Marie Finger, rosy-lilac, with rosy-salmon centre, and others. Mr. John Keynes, of Salisbury, was second, with small but fresh and shapely flowers. Among them we remarked Madame Eugene Verdier, blush; Marquise de Castellane, globular, bright rosy-lilac; Caroline de Sansal, a full, globular, old, blush-white variety; Etienne Levet, a finely-shaped, rosy-purple kind; Nardy Frères, a cup-shaped purple kind, very distinct, and as here shown, nearly perfect in form; François Michelon, bright rose; Catherine Mermet, creamy-blush; Elie Morel, rosy-lilac; Devoniensis, and others were also well represented. Mr. Chas. Turner was third, and Mr. Cant, of Salisbury, fourth. In the last-named groups we noted excellent blooms of Dupuy Jamin, with smooth rose-purple petals; Captain Christy, Louis Van Houtte, Ville de Lyon, bright lilac-purple; Duke of Edinburgh, crimson; Madame Bravy; and good blooms of Madame Lacharme. In the class for twenty-four Roses, three trusses of each, Mr. Turner was first, with fresh and shapely blooms, Messrs. Paul & Son second, and Mr. J. Keynes third. Conspicuous among the varieties in this class were Charles Lefebvre, purple-crimson; Countess of Oxford, lilac-purple; Fisher Holmes, dark crimson; Maurice Bernardin, crimson-scarlet; Marie Baumann, Baroness Rothschild, Mrs. Charles Wood, Madame Vidot, Madame Lacharme, and Le Havre, the last a full crimson-purple Rose of exquisite form. In the class for twenty-four varieties Mr. Turner was first, with a fine group, consisting of good blooms of Lælia, pearly-lilac; La France, François Michelon, Duchess of Edinburgh, and others; Mr. B. Cant was second, and Mr. Keynes third. Messrs. Cranston & Mayo also showed a good group in this class. Mr. B. Cant was first in the class for twelve blooms, Mr. Cooling second, and Mr. R. N. G. Baker third. In the amateurs' class for forty-eight varieties, Mr. Baker, of Heavitree, near Exeter, was first, with fresh-looking, well-shaped blooms, among which we noticed Baroness Rothschild, La France, Pierre Notting, Madame Bravy, Duchess of Edinburgh, Camille Bernardin, Dr. Andry, and others, all in good condition. Mr. Nicoll, of Drinkstone Park, was second, with a very even lot of blooms; and Mr. J. Hollingsworth, of Maidstone, third. In the classes for single stands (twelve blooms) of different varieties, Messrs. Paul & Son were first, with Alfred Colomb, in excellent condition. Mr. Cant had the best stand of Duke of Edinburgh; Baroness de Rothschild was represented by ten stands. The best stand, however, was that shown by Mr. Baker, of Heavitree, who had remarkably fresh, large, and lovely blooms. Five stands of La France were contributed, the best being that furnished by Mr. C. Burley, of Brentwood. Mr. Cant had the best examples of Maréchal Niel, and remarkably beautiful blooms of Devoniensis, some of those that were fully expanded measuring 5 in. in diameter, but these were not so pretty as the half-opened buds.

Tea Roses.—These were well represented, the Rev. J. B. Camm being first in the amateurs' class, and Messrs. Mitchell and Sons, of Piltdown, in that of the nurserymen's. Excellent stands also came from Messrs. Paul and Son, Mr J. Keynes, and others. Among the varieties we noted Cheshunt Hybrid, crimson-purple; Niphetos, a large, smooth-petaled, creamy-white kind; Devoniensis, very fine in several stands; Madame Sertot, white with a blush centre; Letty Coles, lilac, with a deep rosy centre; Madame Hippolyte Jamin, creamy-buff in the centre; Comtesse de Nadaillac, buff, and exquisite in shape; Souvenir d'Elise, creamy-white with a rosy centre; Eliza Savage, creamy-sulphur; Homère, white tipped with lilac-purple; La Boule d'Or, sulphur yellow; Rubens, creamy-blush, and others.

ROYAL HORTICULTURAL SOCIETY.

JULY 5.

THIS was but a small meeting, a fact which may be attributed to exhibitions being held elsewhere on the same day. Among subjects of more than usual interest may be mentioned two splendid specimens of the bright, rosy-flowered Spiræa palmata, from the gardens of Mr. Crowley, Waddon House, Croydon; Messrs. Veitch & Son, too, sent a new form of Lælia, something in the way of L. grandis, and a large, drooping, crimson-flowered Gloxinia, named Duchess of Teck. Mr. R. Veitch, of Exeter, furnished a well-grown panful of the fruiting Duckweed (Nertera depressa), in the form of a dense, cushion-like mass of coral berries. A small collection of Melons came from Lord Exeter's gardens, at Burleigh; and a collection of about thirty varieties of Strawberries was sent from Chiswick.

First-class Certificates.—These were awarded to the following new flowers:—

Double White Zonal Pelargonium, Mrs. Trevor Clarke (Laxton).—A variety of considerable merit, its growth being robust and compact, and its pure white flowers being borne in close, well-elevated trusses.

Large-flowered Pelargonium, Lord of the Isles (Laxton). A well-shaped flower, of a bright rosy colour, the upper petals being of a rich velvety-black.

Pelargonium, Sappho (Foster).—A bright rosy-lilac variety, having a black spot on the upper petals and a clear white eye. For purposes of decoration, it is a plant which well deserves attention.

Pelargonium, Foley (Foster).—A rich velvety-crimson kind, veined with black.

Miscellaneous Plants.—Messrs. Veitch & Sons contributed plants of Ismene Amancães, a large yellow Amaryllid from South America, long introduced to our gardens, but now rarely cultivated; Osmunda palustris, a pale green and very beautiful form, well worth a place where Ferns are grown; a Lælia, in the way of L. grandis, having small, greenish-yellow, white-lipped flowers; Gloxinia Duchess of Teck, a large crimson variety, having fresh and handsome foliage; Niphobolus Lingua cristata, a crested form, the fronds of which have silvery undersurfaces. Cut specimens of Eryngium pumilum came from Mr. Charles Green, of the Holmesdale Road Nurseries, Reigate; in its metallic blue inflorescence this plant resembles the old E. amethystinum, but the leaves are different from those of that species. Mr. R. Veitch, of Exeter, showed a splendid mass of Nertera depressa 15 in. in diameter, covered with bright orange fruit. Mr. C. Turner furnished a well-grown example of Lobelia elegantissima, a dwarf, robust-habited plant, having large, dense blue flowers with a conspicuous white eye. Mr. Strathan, gardener to P. Crowley, Esq., contributed two large plants of Spiræa palmata, about 4 ft. in height and fully as much in diameter. Seedling Pansies came from Messrs. Jas. Cocker & Sons, of Aberdeen; and Messrs. Bell & Son, of Norwich, sent a new seedling Rose named Mrs. Opie. A new crimson Rose, named Black Diamond, came from Mr. Chas. Turner, and Mr. Thos. Laxton, of Stamford, showed seven new seedling Roses in excellent condition. Among these Captain Webb is a vivid purplish-crimson; Chas. Darwin, crimson-scarlet; Lady Isabel Cecil, straw colour; Dr. Hogg, purple; and Earl Warren, a full rosy-purple variety.

Fruit.—A collection, consisting of thirty-five varieties of Strawberries, came from the Society's gardens at Chiswick, and out of this number the following were selected as the best, viz.:—Princess Dagmar, Sir J. Falstaff, Fair Lady, Alpha, Beauty of England, Prince Alfred, and Héricart de Thury. Mr. Gilbert exhibited a handsome dish of Jackson's Tomato—a large and even fruit. A well-grown Shaddock came from Mr. J. Strathan, gardener to P. Crowley, Esq., Waddon House, Croydon; and several fine Melons came from Mr. Gilbert, of Burghley. Dr. Hogg showed well-kept specimens of Blenheim Pippin Apple.

Royal Botanic Gardens.—On Wednesday evening, the 5th inst., the evening fête of the Royal Botanic Society was held at the Gardens in Regent's Park. All the entrances were illuminated, and opal globes lighted with gas lined the main walk. The covered walk which runs round the Gardens was hung with little oil lamps of many colours, with shades above them to guard against the accidents of climate. The rain, however, though it threatened all the evening, held off, with the exception of a few drops, and the Gardens were thronged by many visitors. Ground-glass globes, hanging from the trees separately or in festoons, shone here and there among the flower-beds, and afloat among the Water Lilies of the lake. The bridge was decorated with little lamps, and Chinese lanterns were hung about the refreshment tents. A very sickly smell was diffused throughout the Gardens in the immediate neighbourhood of these lamps. At ten o'clock these decorations paled before the coloured fires which were burnt upon the banks of the lake and elsewhere, their rays divided into fan-like shapes by the branches of the trees among which they were displayed. The electric light was shown from a tower erected for the time upon the mound to the east of the main walk. Prizes had been offered by the Society for floral table decorations, and the collections sent in were exhibited in the fruit tent, the large marquee, and in a special marquee on the lawn. At ten minutes past eleven the Duke and Duchess of Teck arrived with a distinguished party at the entrance in the north corridor, and proceeded to the front terrace, which had been reserved for them. They were welcomed with the National Anthem and a fresh display of coloured fires.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

THE anniversary dinner of the Gardeners' Royal Benevolent Institution was held at the Albion Tavern, Aldersgate Street, on the evening of Friday, June 30. The chair was occupied by Dr. Hogg, Secretary of the Royal Horticultural Society, who was supported by Lord Alfred S. Churchill, Rev. C. P. Peach, Mr. Robert Wrench, the Treasurer, Mr. Frank Fuller, Mr. Richard Smith, Mr. T. F. Rivers, Mr. J. Bolton, Mr. G. F. Wilson, F.R.S., Dr. Masters, F.R.S., Professor Bentley, Mr. Marnock, Mr. William Paul, Mr. E. J. Beale, Mr. Charles Lee, and among the rest of the company were the Rev. Canon Hole, Mr. T. Moore, Mr. B. S. Williams, Mr. Charles Turner, Mr. Weeks, Mr. Deal, Mr. James Gray, Mr. Meston, Mr. H. J. Adams, Mr. A. C. Wheeler, and a large gathering of horticulturists to the number of 100 or more.

The room was richly decorated, Mr. B. S. Williams, Messrs. J. and C. Lee, Messrs. Veitch and Sons, and Mr. Charles Turner having contributed many specimen plants of Palms, Cycads, Tree Ferns, Dracænas, Caladiums, and other fine-foliaged plants, interspersed with other plants in bloom. The tables, too, were furnished with the ample resources of the establishment, which were greatly helped by several elaborate plateaux and groups of fruit and flowers presented for the occasion by Mr. Dickson and Mr. Buck, the Covent Garden florists.

The Chairman, in introducing the toast of the evening, "Prosperity to the Gardeners' Royal Benevolent Institution," said:—In proposing this toast I have to introduce to your notice the claims and merits of an Institution which is not one of those whose history has long been associated with that of this ancient city. Its origin is of more recent date, and does not extend beyond the time of living memory. It was on January 17th, 1839, that a few earnest men, of whom few are now alive, met at the Crown and Anchor Tavern, in the Strand, to inaugurate a Gardeners' Benevolent Society. Mr. Buchanan, of Camberwell, was in the chair, and they resolved to carry out the object they had in view. On the 29th of the same month a second meeting was held at Wright's Hotel, in the Strand, the Duke of Cambridge having become President. The only members of the original Committee now living are Mr. Chandler, formerly of Vauxhall; Mr. W. Gregory, formerly of Cirencester; Mr. Lane, of Berkhamsted; Mr. Marnock, a name honoured in horticulture, and whom we have the pleasure of seeing with us this evening (great cheering); and Mr. Protheroe, of Leytonstone; so that out of the twenty-four members of the original Committee there are only five who are now alive. The progress of the Institution was slow at first. Dissensions crept in, and charges of mismanagement were made against the Secretary, who was replaced in the year 1843 by Mr. Cutler, who has remained Secretary ever since, and under whose good management, coupled with that of the Committee, the Institution has arrived at its present state of usefulness. With your permission I will take a retrospect of the working of the Institution by way of reviewing our progress, to see what condition we were in in 1842 and compare it with the present. It is well that we should do this occasionally, that we may know whether we are advancing or retrograding. In 1842 we started with a balance in hand of £106 9s. 10d., and our income from all sources was £2042, of which £187 12s. was from subscriptions. We had then £400 invested in consols, and that year £200 more was added; and as the report states, "these gratifying prospects induce them to recommend that two pensioners be elected according to the rules of the Institution." Let us now turn to our present balance-sheet of 1876. We start this year with a balance in hand of £441 9s. 8d., and our income from all sources is £1634 2s. 3d., of which £693 is from subscriptions. We have £10,750 invested in 3 per cent. consols, a balance at the bankers' and in hand of £430 12s., and seventy-four aged pensioners on our list, who are receiving sums of £16 and £12 a year. Now we have doubtless made great progress since 1842, but has it been as great as it ought to have been? I think not; and my reason for saying so is that when I look at the printed list of subscribers there are numerous names of employers and employed which arise in my mind whom I do not find there, and who ought to be there. It is to the employers that we must chiefly look to aid the Institution on behalf of the gardener, and I trust that some scheme will be devised of reaching them more effectually than we have hitherto done. But there are many gardeners who can contribute also, and who do not. I have heard some even rail against the Institution, while others scoffed at it; but we have seen some of those who when in their prosperity were loudest in their attacks upon it come, both they and their widows, to be recipients of its charity, and thereby have coals of fire heaped on their heads.

No. 243.] [SATURDAY, JULY 15, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

A DAY AMONGST THE ROSES AT COLCHESTER.

IF one wishes to see, and who does not, English-grown Roses at their best, perhaps he cannot do better than visit the grounds just now of Mr. Cant at Colchester. He is the champion exhibitor this season, having carried all before him, with the exception of the large class (72), at Alexandra Palace. Being an ardent lover of Roses, I determined to go to Colchester to unearth, if possible, the secret of Mr. Cant's success. It can hardly be in the soil; that is a poor, rather light, and hungry loam. Yes; but what of its enrichment by means both of liquid and solid manure? Well, this: that the ground to which most manure was given produced the worst Roses—worst, however, has a limited meaning at Colchester, as it would have been difficult to find a stand of bad Roses on the place at the time of my visit, on the 10th inst. But the grandest quarter of Roses on the Manetti I have ever seen followed Pear trees, and had no manure given it whatever. Nor could the site be said to have had much to do with so fine a display, for the Rosery lies on the side of a hill, hot, dry, and rather fully exposed to the wind. Nor is the treatment unusual, for seldom are the Roses even watered; and although I saw some canvas caps, almost the form of policemen's hats, and round zinc crowns, there was not one in use at the time of my visit. Mr. Cant says they ruin the colour of Roses. Such caps are only used to protect the flowers in wet weather. Nor was any surface-mulching—a great point with many growers—visible. Cover the surface with 6 in. of juicy farmyard manure, so that no lady can get near her Roses with comfort, and it is thought they may be cut as large as Cabbages. The ground was all bare at Colchester, somewhat loose on the surface, and free from weeds. How, then, it may be asked, has Mr. Cant achieved such great success? There are two causes pretty obvious on the surface after a visit to Colchester. These may be epitomised as skill and numbers. Mr. Cant's skill, fired by enthusiasm, runs through the whole matter, from the beginning to the end of Rose growing and showing. He lays the foundation of his success in vigorous Briers from seeds, cuttings, and hedgerows. His Standard Briers were the finest I have seen for years. His Manetti Stocks, on which he works most of his grafts, were of that medium, healthy growth, that neither starves the Roses budded thereon, nor feeds them to excess. As a result of the care in his selection and rearing of Stocks, the Roses make the most perfect and satisfactory growth. It is impossible to form an idea of their health and strength without going to see them. Many of the weaker growers seem to rival the strongest in wood and fine spread of foliage. Even the Baroness Rothschild on the Manetti forgets her stunted habit, and runs up to a fair length before she develops her glorious crown of beauty. Good wood ensures good bloom—a fact which is fully confirmed at Colchester. Much skill is also displayed in the selection and arrangement of the proper flowers for showing, many of which must be cut almost to the hour. Some, if cut too young, will wither up instead of opening; others, if cut too late, invariably open their eyes to have a peep at the judges. There is, in fact, a tide in the life of each flower, which taken at the flood leads to first honours. Few men, perhaps, have a more thorough knowledge of this than Mr. Cant, but notwithstanding all this, numbers have also much to do with success. Numbers are in Rose growing and showing as much or more than in most matters. At Colchester also, the finest Roses are arranged in masses. There are whole rows of such grand show Roses as Marie Baumann, Madame Victor Verdier, Duke of Edinburgh, Mrs. Charles Wood, Fisher Holmes, Charles Lefebvre, Duke of Wellington, Baroness Rothschild, Alfred Colomb, and, in fact, all the finest Roses in cultivation. Neither are the masses all confined to one place or to one style. There are masses on the hills and masses in the valleys; masses on the walls, masses on the Manetti, seedling Brier, cuttings, and on tall and dwarf standards; so that if any Rose be out of form or character in one place, it is almost sure to be at its best in another, and then it is comparatively easy to cut the proper number of perfect flowers from a mass of 500 or 1000 plants. Those, in fact, who grow all the finest Roses in masses, and have skill to select the finest flowers, will be sure to win. But in this all Nurserymen who enter largely into Rose growing are on an equality—some of them, perhaps, even in advance of Mr. Cant. Therefore, after all, the secret of his success lies in his skill. Of fine Roses we particularly noted the following, in addition to those we have already named, viz.:—Countess of Oxford, Dr. Andry, a fine old Rose rising in popularity; Duke of Wellington, Duchesse de Caylus, almost equal to the Duke of Edinburgh; Dupuy Jamin, Elie Morel, Ferdinand de Lesseps, François Louvat, François Michelon, Hippolyte Jamin, Jean Lambert, Horace Vernet, La France, La Duchesse de Morny, Le Havre, Louis Van Houtte, Madame Crapelet, Madame Victor Verdièr, Madame Marie Finger, Marguerite de St. Amand, Marie Rady, Marquise de Castellane, Maurice Bernardin, Miss Hassard, Monsieur Etienne Levet, Monsieur Noman, Madame Lacharme, Prince Arthur, Prince de Porcia, Prince Camille de Rohan, Princess Mary of Cambridge, Princess Beatrice, Reynolds Hole, Victor Verdier, and Xavier Olibo. Among Teas, Devoniensis stood out supreme, as did also Madame Jules Margottin, Madame Villermoz, Marie Van Houtte, Niphetos, Rubens, Souvenir d'un Ami, and that grandest of all yellow Tea Roses, though often classed with Noisettes, Maréchal Niel. The latter is grown in considerable numbers, as standards, in a sheltered place with Devoniensis and Niphetos. Whosoever wishes to see good Roses in their prime should hasten to Colchester at once; for though still fresh and beautiful, of course the end of the show season and the advance of the year must soon sadly impair the beauty of one of the grandest Rose shows in England now held in the nurseries of Mr. Cant at Colchester. D. T. F.

DYNAMITE AND TREES.

SOME experiments made in reference to this matter appear to have been successful on the Duke of Hamilton's estate (see THE GARDEN, vol. x., p. 9). The power of dynamite was tested about two years ago in Longleat Park. The first subject experimented on was a very large Beech that had been grubbed out. The agent for dynamite in this district asserted that he could cut off the limbs, and even the butt end of the tree, by means of fastening an India-rubber tube round them, filled with dynamite; after, however, several explosions had taken place, it was found that only the bark had been blown off, and only one instance occurred in which a slight indentation had been made in the wood. A number of cartridges were then applied to the butt end, but to little purpose, for it was soon evident that it was only a waste of time and material to experiment further on Beech trees. Nor was the agent in question more successful with some stumps and roots of trees on which he tried experiments. The stumps were fractured and split across, it is true, but in no instance were they blown out or moved from their places. A large number of spectators were obliged to return home disappointed with the day's experiment at Longleat; but the agent was not daunted, and asked me to appoint another day for a further trial. This was done, but I can only say that the results were not more successful than on the first occasion. I have no doubt that dynamite is a valuable and powerful blasting agent in mines or quarries, but for taking down trees, or blowing up stumps, I have no faith in its ever coming into general use. G. B.

Longleat.

Lucas Strawberry.—This variety is, I believe, of Belgian origin; I find it to be an excellent bearer in the strong soil of the kitchen garden here, and its flavour is first-rate. In my opinion no cultivator of Strawberries should be without it; and, with President, British Queen, and Dr. Hogg added, the selection could not be excelled. For an early variety Héricart de Thury has this year been the most productive and of excellent flavour, and Rivers' Eliza has been another great bearer, and, although of a paler colour than some others, excellent for preserving. For a deep red solid kind for preserving there is none beats the Grovsed or Old Scarlet, and they likewise ripen early.—W. TILLERY, *Welbeck.*

NOTES OF THE WEEK.

Leptosiphon roseus.—This charming little Californian annual is now in great beauty; some lines of it in the Royal Horticultural Society's garden at Chiswick are among the most beautiful things we have seen this season, the flowers—delicate rose—being densely produced on plants about two inches high. These plants have been raised from spring-sown seed.

Wasted Fruit.—As was the case with the Plums last autumn, the second-sized and smaller Strawberries are now rotting on the ground in various districts round London, though the poorer classes in the remoter districts would probably pay a price for them that would make it worth while to gather the fruit and send it to town. There would seem to be great changes required in our marketing system.

Pansies: Blue Bonnet and Sunnypark Rival.—These exquisite Pansies, dark purple-ultramarine, with gold centres and pure black markings, seem to surpass in the richness and depth of their hues the fairest flowers of the Alps. We are indebted for specimens of them to Messrs. Jas. Cocker & Sons, of Aberdeen. Of the two, Blue Bonnet is the most intense in colour.

Lilium giganteum.—Mr. David Uphill writes to say that a fine specimen of this Lily is now in bloom at Moreton, Dorchester. It has three flower-stems, one being 9 ft. 7 in. in height, the others each 9 ft. 2 in., the whole bearing thirty strikingly handsome blossoms, twenty-nine of which are now open.

A new Tea Rose.—Messrs. Bell & Sons, of Norwich, have sent us blooms of a new free-flowering Tea Rose, named Mrs. Opie, which, judging from its flowers in a cut state, seems well worth a place as a wall or pillar Rose. Its colour is delicate, magenta-lilac, flushed in the centre with rosy-salmon, and the petals are smooth and shell-like. It is to be sent out in the autumn along with the new climbing Rose Catherine Bell.

Old Lilies.—The recent influx of new and handsome Lilies to our gardens reminds us that there is nothing among them fairer than the old white Lily (Lilium candidum), a plant frequently neglected or unseen in "show places," and, at present, happiest in cottage gardens. It well deserves to be well grown and well placed. As in many other cases, a well-grown tuft or group happily placed will tell better than an army of specimens situated at regular intervals along borders or shrubberies.

Packing Flowers.—We received the other day, by the same post, two boxes of flowers packed so differently that the result may be worth noting. One was a tin box containing Pansies, from Messrs. Cocker, of Aberdeen. Their stems were inserted in wet cotton wool; beyond that they had no packing but Ivy leaves, and yet, notwithstanding their long journey, they arrived in as fresh a condition as if they had just been cut from the plants. The other box contained a single spike of double Sweet William from Bradford, wrapped in dry wadding, and placed in a cardboard box, which reached us smashed, and the flower so shrivelled as to be scarcely recognisable, the dry wadding having completely robbed it of its moisture. Of all materials used for packing flowers, dry cotton wool is the worst.

Humboldt's Lily.—Mr. W. Bull sends us four handsome forms of this fine Californian species, differing mainly in the size and number of their spots, but also in the relative sizes of the flowers. He gives them all Latin names, but already so much confusion exists in the genus, that naming slightly-varying forms is likely to tend to more confusion still, and is, therefore, a practice to be discouraged. L. Humboldti varies infinitely in its native country, and, therefore, to give each of the forms a distinct name is undesirable. If it be thought expedient to do so however, English, and not Latin, names should be used for the varieties.

The Potato Beetle.—The Potato bug has again made its appearance in America. Paris green, a deadly poison, is much used to destroy it. Mixed with plaster or fine earth, it may be dusted on the plants, or it may be stirred up in water and sprinkled from a watering-pot. Great care should be taken not to breathe the dust, nor handle with bare hands. Hand-picking is one of the surest remedies. The eggs are found on the under surface of the leaves. The grub is orange-red in colour, and lives about ten days on the leaves and stems, after which it enters the ground to pass its transition state. The beetle itself is half an inch long, has ten black stripes on the back, and is reddish underneath.

Almeria Grapes in Cork Dust.—We have lately seen Almeria Grapes in good condition in Mr. Gulliford's shop in Covent Garden that had been nine months in his cellar preserved in barrels of Cork dust.

THE FLOWER GARDEN.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

The rose-coloured Canterbury Bell has been so beautiful of late and, in the case of well-grown plants, so stately, that we fancy even those who have little to do with such inexpensive materials as biennials would find it worth their attention. This variety of our well-known old friend is as great a gain to our gardens as any annual that has been introduced for years. The Alstrœmerias, when under favourable conditions, furnish some of the finest effects of the garden now, their orange and coral tints being so distinct. They grow quite freely when established awhile in good soils, and we have noticed them freely naturalised on a mound of rich earth, where they held their own among shrubs. In nurseries one seldom sees the lovely Delphiniums fully developed, as they are transplanted so often. In Mr. Bohn's garden at Twickenham they stand up like grenadiers among the Evergreen shrubs, and have a fine effect. The old Catananche cœrulea and its white form are still seen here and there, but they are not very popular in the face of the many brilliant perennials now obtainable. Among Lilies the noble L. Browni has been in flower for some time. Most remarkable among recent gains are the Irises of the Kæmpferi section, which bring quite a new order of beauty into a family already rich in charms. The continuous bloom of Tropæolum polyphyllum is one of its merits. The shoots seem never to exhaust their blossoms. It is a true trailer, rambling freely and throwing up its flowers as if that were more welcome to it than any mode of training. Other trailers, however, would, if allowed liberty in this way, look much happier than if trained. Among the smaller plants the delicate-looking, but large blossomed Nierembergia rivularis is in flower. It does not seem to have become established in our gardens, or to have as yet become what is called a "good perennial;" nevertheless, it is so distinct and beautiful that it should have a place in all extensive collections. The white Crinum capense album is a noble plant, which thrives admirably in the Regent's Park, where a tuft of it stands out quite handsomely. Deep and somewhat moist soils seem to suit it well. The prolonged bloom, size and fragrance of the flowers of this plant, and its stately habit entitle us to rank it among the most precious hardy plants we possess. The Californian Lilies may now be seen at Barr's Trial Ground. Delphiniums are remarkably well-grown in the Exotic Nursery, Tooting, and the Calochorti are extremely interesting and showy at the Hale Farm Nurseries.

New Clematises.—Messrs. Cripps and Sons, of Tunbridge Wells, have sent us drawings of some of their seedling Clematises, among which we notice the following:—C. Louis Van Houtte, a six- to eight sepaled flower, about 5 in. in diameter, of a vivid purple colour, and of good shape. C. excelsior, a double-flowered variety, very closely resembling Countess of Lovelace (Jackman). The colour is a clear purple, each segment being terminated by a yellowish-green awn. One of the most brilliant and distinct of all is C. Guiding Star, a six-sepaled flower of good form, and of a vivid maroon colour shot with amethyst. C. Madame Van Houtte is a white six-sepaled flower. C. Sylph, a creamy eight-sepaled flower, suffused with lilac; and C. Fairy Queen is similar to Madame Van Houtte, but has a pale carmine centre to the white sepals. C. Victoria is a rich purplish-carmine, six-sepaled flower of good substance. Judging by the plates, these varieties are likely to become popular decorative plants, either for pot culture or for draping walls or rockwork.

Geranium Endressi.—The rose-coloured Geranium for which "Oxon" cannot get a name is, doubtless, G. Endressi; at least, that is the only rose-coloured Geranium answering his description which I can call to mind, but if he will send me a bloom and a leaf, I will endeavour to verify the matter. I should feel obliged by a bit of G. Lamberti, which I have lost.—Thos. Williams, *Ormskirk.*

A Climbing Hydrangea.—In a late visit to the nurseries of Mr. Parsons, of Flushing, our attention was directed to a climbing Hydrangea, called H. scandens. It is a true climber, sending out tendrils. Should its inflorescence be like that of other Hydrangeas, it will prove a most striking plant trained over porches and against walls. It was sent by Mr. Hogg from Japan.—"Moore's Rural."

Greater Astrantia (A. major).

Large-flowered Everlasting Pea (Lathyrus grandiflorus).

Variegated-flowered Monk's-hood (Aconitum variegatum).

Tufted Hairbell (Campanula cæspitosa).

Carpathian Hairbell (Campanula carpatica).

Catananche cœrulea.

Orange Alstrœmeria (A. aurantiaca).

Dahurian Bindweed (Calystegia dahurica).

Canadian Lily (Lilium canadense).

Common Monk's-hood (Aconitum Napellus).

Scotch Thistle (Onopordon Acanthium).

White Stonecrop (Sedum album).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

WALL DWELLERS.

The establishing of Alpine flowers on old walls, ruins, &c., is one of the most interesting modes of cultivating these plants. They establish themselves wherever they get a chance; but when man deliberately and with some slight knowledge of the subject assists them, then the old wall becomes the most beautiful and interesting of gardens. On ruins and old walls near the Alps, particularly in Italy, may be seen various Alpine flowers and mountain bushes established from seeds sown at first by winds or birds. The Colosseum, as everybody knows, was once so rich in flowers that Dr. Deakin wrote the flora of it; but now these plants have all been cleared off, and the ruin made, in consequence, much less beautiful than when it wore its garland forest. On the colossal walls of Caracalla's Baths and many other ruins the Arbutus and the Rock Rose, the Laburnum and the tree Heath, the Fig and the Honeysuckle, the Olive and the Bird Cherry, the Laurustinus and the Ivy, found a home. The Acanthus, model of the column-rearer, carved its own fine leaves far above his capitals, the Maiden-hair Fern came and graced every moist and shady nook; the Giant Fennel was there in spring, with its large graceful plume; the Clematis and the Convolvulus, the Cyclamen (two or three kinds), the Pink, the Everlasting Pea, the Poet's Narcissus, the Crocus, the Mignonette, the Rosemary, the Violet, the Bee Orchis, and a host of others, all grow there too, just as freely as the Pyrenean Erinus grows on old walls, where it has escaped from cultivation in Britain. With this fact in mind, it is easy to imagine that the number of plants that could be grown in similar positions is almost illimitable. It is not without a useful lesson, apart from that of suggesting how old walls, &c., may be embellished. The plants grow on these ruins much better than on the rock gardens so commonly made for their accommodation. And the reason is, that the rock garden, as generally made, is so loose and open in texture that, though the soil may be very suitable, plants perish from drought. On the ruin, such moisture as occurs between the stones is prevented from rapidly escaping by the stones of the surface and the firm texture of the whole. Thus, on the ruin we find a garden, and on the so-called rock garden too often nothing but clinkered bricks or bare stones and dust. The best way of establishing plants on walls is by sowing seeds in the chinks and earthy places, the best time being early autumn or spring. Small seedling plants might also be inserted carefully in autumn or winter. Mr. Latimer Clarke has been making experiments with Alpine flowers on the perpendicular surfaces of the walls in his garden at Sydenham, and has succeeded in establishing many kinds. In parts of the country where Ferns and other plants grow freely on stone walls, good conditions exist for the growth of Alpine plants in like places.

V.

A FRENCHMAN ON STOCKS.

The Italians were the first to cultivate Stocks, which grow wild on the shores of the Mediterranean. One of the most beautiful of the family is the Purple Cocardeau, which, as its name indicates, bears large and handsome flowers. It may be sown during the latter half of the year, so as to flower the season following. The large varieties present a peculiar anomaly in their flowering. Those which are sown from April to July do not flower in the order of their sowing, those sown in July always flowering before those sown three months earlier. Plants of the Purple Cocardeau generally give from 45 to 55 per cent. of double flowers, but by growing them according to M. Chaté's method, 70 or 80 per cent. may be obtained according to the different varieties. The principal colours are the red, first grown at Compiègne in the beginning of the century, and introduced into Paris about 1822; the white, first grown in Paris in 1833; the violet, first grown in Paris in 1845; the bright carmine, first grown at Erfurt in 1854; and the bronze crimson, known as the Louise Léon, first grown by M. Benary, a seed-grower at Erfurt in 1859. The "double-flowering" Stock is so called, because, after the first set of flowers has passed off another set makes its appearance, so that the time of flowering is greatly extended. This property would render this variety one of the most valuable of all were it not for the great scarcity of double flowers, of which there are hardly 1 per cent. M. Chaté has, however, succeeded in increasing the number of doubles 10 per cent by pinching off three-quarters of the seed-vessel instead of only one-quarter. This method especially succeeds with the carmine-red variety. The double-flowering Stock is not an advantageous kind to grow, owing to its very slight tendency to produce double flowers; it is, however, a very hardy variety. It should be sown in April and July for flowering in the May and June of the following year; those sown in July rarely flower the second year. The colours of the different varieties are white, violet, light rose, extra bright carmine-red, bronze, and crimson-red.

The Pyramidal Stock.—This valuable variety was obtained through the German seedsmen in 1850. It is an exceedingly beautiful kind, often growing to the height of over 3 ft. The branches are crowded with bloom, and four or five flowering branchlets surround the base of each spike, giving the plant a handsome port. The Pyramidal Stock is more double than the preceding variety. It generally yields 25 per cent. of double flowers, but, treated according to M. Chaté's method, it may be made to yield 40 per cent. Seeds of it should be sown in April and July to flower the following year. Their colours are carmine-red, crimson, white, deep violet, light violet, pale pink, flesh colour, brick-red, bronzed nankeen, and chamois.

Large Tree Stocks.—These are the oldest of all the varieties of Stocks; the branches are slender and the flowers smaller than those of the other kinds. They yield 60 per cent. of double kinds, and are obtainable in twenty-five different colours.

Intermediate Stocks.—These are the most beautiful of all the Stocks, uniting, as they do, all the good qualities of the others. They bloom early and abundantly, keep a long time in flower, and bloom for two years in succession; the flowers are large and their colours very brilliant. They grow easily from seed, yield double kinds in the proportion of 70 or 80 per cent., and possess many other qualities that recommend them to the attention of lovers of this race of plants.

Paris Stocks.—These were found accidentally; they are the progenitors of the Paris Stock properly so-called and the Imperial Perpetual Stock. The latter was first obtained by the German horticulturists, and is a cross between the Paris Stock and the annual Ten-week kind. The name just given was bestowed on them by their producers, but they are also known as Large and Small-flowered Emperor Stocks. The flowers of the Paris Stocks are smaller than those of the Perpetual Emperors; the leaves of the latter variety are thicker, fleshier, and more delicate than those of the Paris Stock, whose leaves are drier; they are also apt to go mouldy during the winter. They may be sown in May and October, those which are sown early going out of flower more quickly than the others; they are also more liable to become spotted. The best time for sowing this Stock is from the 15th of July to the 15th of September; it should be pricked out into frames in which it is to be kept during the winter, and at the beginning of April it may be transferred to its proper positions out-of-doors. This kind ordinarily yields from 50 to 60 per cent. of double sorts, which may be increased to 75 or 80 per cent. by following M. Chaté's mode of treatment. There are more than twenty-five varieties of this kind of Stock included under the names of Paris and Perpetual Emperor. Among Emperors, the following embrace the most distinct colours:—Bright carmine, crimson, white, light brick, light blue, flesh, bronzed nankeen, pinkish-purple, dark and light violet, bronze, and chamois. Amongst the Paris Stocks the four following are the best:—Bright carmine, crimson, white, and violet. In the last-named colour will be found fewer double sorts than in the others.

Ten-week Stocks.—The Greek variety has shining green foliage, which produces an excellent effect. They should be treated the same as the Cocardeau and Perpetual varieties. They flower abundantly, and are of various colours. One of them is yellow, and is the only instance of this colour occurring among Stocks. Singularly enough, the single flowers, the seeds from which produce the yellow double variety, are always white. It is a good plan to separate the seedling plants of this variety from others that bear white flowers, for they are apt to go back to their primitive colour, which is white. The

following varieties will yield 50 per cent. of double kinds, or, if M. Chaté's plan be followed, 80 per cent.:—White, sulphur yellow, and straw colour. There are also crimson, pink, violet, and buff varieties, but they yield but few double kinds.

A new variety, with white flowers, called the White Greek Cocardeau, has been lately introduced. This belongs to the Perpetual Emperors, and bears long spikes densely covered with white bloom, the base being surrounded by a ring of small flowers. It closely resembles the Giant Cocardeau, and holds one of the highest places amongst this beautiful tribe. It yields about the same proportion of double sorts as the first three varieties. The Greek Stocks are a little more tender than the other members of the family, and must, therefore, be carefully looked after during winter.

Perpetual Autumn and Winter Ten-week Stocks.—These were first obtained by the Erfurt seedsmen by crossing the Pyramidal variety with the Perpetual Emperor. Sown in heat in February, and pricked out into a frame, they produce large masses of bloom from October to January. Flowering as it does so late in the season, this variety may be grown in pots as ornaments for hot-houses or rooms when the scarcity of other flowers renders it a boon. It includes eight different kinds, which yield from 50 per cent. to 70 per cent. of double forms, according to the method in which it is grown. It is most important to keep the secondary shoots well pinched down, as this variety has a tendency to return to the primitive type when the seed is not fully ripened. The following are the principal varieties belonging to this class:—Carmine, white, bright carmine, chamois, brick-red, light pink, dark violet, and sky-blue.

Annual Ten-week Stock.—This variety may be divided into seven different kinds, each of which gives rise to sub-varieties. They should be sown for succession from the month of February onwards. Sown in heat and pricked out under a warm frame, they may be transplanted out-of-doors as soon as they are old enough, and will bloom throughout the months of May and June. For June and July flowering they should be sown in heat in March, and pricked out into a cold frame. Sown in a cold frame in April and May, and pricked out at once into the open borders, they will flower in August. Sown in August, September, and October, like Perpetuals, and potted off for the winter, they will bloom in March, April, and May, so that by proper management they may be had in bloom during the better part of the year. They do not bloom successfully in the winter, the blossoms mildewing and spotting rapidly, especially if circumstances prevent the frames from being opened for several days in succession.

Large-flowered Ten-week Stock.—This is the finest of all the Ten-week Stocks. Its flowers are very large, and closely resemble the large kinds of Cocardeau. They yield about 75 per cent. of double varieties when grown according to M. Chaté's method. There are more than twenty different sorts, but the following are the most distinct in colour:—Extra crimson (first grown by M. Benary, of Erfurt, in 1861), pearly-white, whitish-violet, carmine, extra white, Parma violet, flesh-coloured, cinnamon, light brick-dust, purplish-pink, and bronzed-yellow.

Greek Ten-week Stocks.—These are largely cultivated for bouquets, especially the white sorts; sown out-of-doors and not transplanted, they only produce one spike of bloom, which is more convenient for bouquet-making than the other kinds. By sowing for succession from February to the end of June they will flower during the best part of the year. They should not be sown after July if they are to pass the winter under glass, being extremely delicate, very liable to be killed by frost, and flowering but poorly, if even they survive the cold. The following are the seven best varieties:—Pearly-white, azure-blue, sulphur-yellow, straw-colour, crimson, violet, and buff. The four first yield from 70 to 80 per cent. of double kinds; the others, which are not much cultivated, a smaller proportion.

The Erfurt Ten-week Stocks.—These are ordinary English Ten-week Stocks raised in Germany. Their general appearance is bushy, their comparatively short shoots being covered with compact masses of bloom. By adopting the plan of sowing for succession, already described, they may be had in bloom nearly the whole of the year. Grown according to M. Chaté's method they yield from 75 to 80 per cent. of double kinds. There are more than twenty-five different varieties, of which the following are the most distinct:—Snow-white, light blue, bright carmine, crimson, ashy grey, pale violet, nankeen, brick-red, dark purple, bronze, and black.

French Ten-week Stocks.—The flowers of these are small, their shoots are thin, and they have long been superseded by those which have just been described; they yield 70 or 80 per cent. of double sorts, but are hardly worth cultivating.

Dwarf Ten-Week Stocks.—These are very pretty, and extremely useful for borders or masses. They produce numberless little shoots, covered with compact masses of bloom, and the kinds are distinct and good. By adopting M. Chaté's treatment these will yield from 75 to 80 per cent. of double sorts. There are fifteen distinct varieties with well-marked colours.

Pyramidal Ten-week Stocks.—These have very long flower-stalks, and are on that account valuable for many purposes. They should be sown in March and July for summer and autumn flowering, and should never be kept through the winter, for during the cold weather they are apt to grow weakly, and produce worthless flowers. When carefully grown they yield from 70 to 80 per cent. of double kinds. The following are twelve of the most distinct, viz.:—White, sky-blue, flesh colour, bright carmine, lilac, crimson, dark brown, purplish-pink, chamois, brick-red, black, and bronzed nankeen.

Lavender-Leaved Ten-week Stocks.—These furnish fine spikes, thickly covered with beautiful flowers, but their foliage is so bad, and so liable to be attacked by mildew, that they are but little grown. There are fewer double sorts, too, among them than among other varieties, these numbering only 60 or 70 per cent., even when grown according to the best method. The principal kinds are white, carmine, chamois, nankeen, brick-red, buff, light violet, deep violet, and black.

[The above is translated from a French pamphlet on growing Stocks on M. Chaté's method, who is an extensive cultivator of these plants.]

ALPINE PENTSTEMONS AND PHLOXES.

The Pentstemons, which form such a marked feature in the vegetation of Western America, are, for the most part, strongly-growing and showy herbs, or spreading, half-shrubby plants, often very beautiful in colour and graceful in port, but having nothing in common with the plants we usually term Alpine. When, however, the traveller crosses the Sierra Nevada, or ascends to the higher mountains of the Rocky Mountain region, he is charmed to see Pentstemons as dwarf and compact as pincushions, and with a dense harvest of flowers set all over their flat and rounded surfaces; these are true Alpine flowers. I have rooted them out on the Sierra from under several feet of snow as early as the beginning of November. These dwarf Pentstemons are as yet almost unknown to our gardens, which are, however, pretty richly stocked with the tiny Phloxes which frequently grow among the dwarf Pentstemons in the vast solitudes of the dreary looking mountains of Western America. Dreary, indeed, is but a weak term wherewith to describe the scenery in many parts of this region, frequently devoid of the tender carpet of Grass which does so much for our European Alps. But the plant lover, who has admired the tall and stately Phloxes in the woods of the Eastern States, and the Pentstemons of the warmer and drier hill-sides of the Pacific slope, is charmed to find miniatures of both these families cushioned everywhere between the huge boulders and shattered mountain ruin. The dwarf-cushioned Phloxes are now very well known in our gardens, and their culture is simple. The dwarf Pentstemons, on the other hand, have got to be added to our garden treasures. Till commoner their home should be the sunny sides of the rock garden in well-drained, gritty, or stony soil. V.

Layering Roses.—Roses are mostly layered either in the autumn or early spring months. Perhaps November is the best month. Some varieties root readily if the shoots be only pegged down firmly to the ground and covered over with an inch or two of earth. Others, and the more slow-rooting kinds, have a tongue slit or opening made at the base of the bud where roots are expected to be produced. This opening or cut may be made under or over the shoot to be layered. Either way, in covering, a small stone or wedge should be placed in the cut so as to keep it partly open. Roots are

then formed and sent forth from the end of the cut portion, just as if it were a cutting. The weaker side shoots are the easiest to bend down to the earth; they also root most freely, and consequently form the best layers. The layering of Roses should not be attempted later than March. Many, however, prefer layering the half-ripened wood in June and July. If branches with later shoots be layered at that season, most of the side shoots may be made to root and form independent plants before winter. There is thus the gain of a season; for layers of ripened wood formed in the autumn or spring will not be sufficiently rooted to form independent plants till a year after, whereas summer layers form plants in a few months. There is yet another simple mode of layering dwarf Roses. At the winter pruning bend down and bury the heads of the side branches a few inches in the earth. Most of these will speedily form masses of roots and send up strong shoots when the growing season comes round; and the plants from such layers can, of course, be detached from the parent stools in the autumn.—D. T. Fish.

Rocky Mountain Willow Herb (Epilobium obcordatum).—The Willow Herbs of our own latitudes are very tall and vigorous, but on the dreary summits of the Rocky Mountains and Californian Sierras, one species has succeeded in contending against the elements by reason of its very dwarf stature; it has, in fact, imitated the Phloxes and Pentstemons of the region: but though not more than 3 in. high it has retained the size and beauty of flower of the most vigorous species, the colour being rosy-crimson. It is perfectly hardy, and thrives in ordinary sandy soil in the rock garden.—V.

The Herbaceous Coral-plant (Erythrina herbacea).—The Herbaceous Coral-plant has a large thick root or underground stem; the stems, from 2 ft. to 4 ft. high, consist of two sorts, one bearing leaves only and the others only flowers, or with a very few leaves. The leaves are compound, having three divisions or leaflets; the stems and leaf-stalks are prickly. The flowering stems bear a raceme, 1 ft. or 2 ft. long, of narrow flowers which are about 2 in. long. The several-seeded pod is much constricted between the seeds, which are about the size of a common Bean, and of a bright scarlet. These brilliant seeds are often picked up by travellers in Florida and other Southern States, and they are frequently sent to us for a name. This Coral-plant will probably prove hardy far north of its native localities, as the stems die down in autumn, and the root is protected under ground. Plants of it in our garden near New York survived the severe winter of 1874-1875.—"American Agriculturist."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Prolonging the Bloom of Pansies.—Pansies are still among the most attractive flowers of our gardens. When they become somewhat tall, and, as not unfrequently happens in the south, infested with insects, it is a good plan to cut them close down; when this is done, especially if they get a good watering where needed, they soon push up strong clean shoots, and flower again abundantly. In some southern gardens this practice is repeated with success several times during the season.—V.

Edraianthus dalmaticus.—On the eve of starting for a tour in Switzerland, I write to mention a very pretty and uncommon plant which is now finely in bloom in my garden on a raised bed. It is the rare Edraianthus dalmaticus, which grows about 4 in. or 6 in. in height, with Grassy foliage, and vigorous, prostrate stems. The flowers are terminal, and resemble those of Campanula glomerata, being clustered in the same manner, and of a bluish-violet hue. It is a fine plant, and more vigorous than the pretty E. Pumilio, which is seldom seen in cultivation. I find that most of the rarer Alpine plants thrive best on a well-prepared and slightly raised border.—Oxon.

Aquilegia cœrulea and Whittmanni.—These are two of the most beautiful of Columbines; both are now in full bloom, a condition in which they have been for at least a month. It is difficult to say which is the most lovely—A. Whittmanni is of a darker blue than A. cœrulea, but it is less graceful in habit. Seeds of each variety should be sown as soon as they are ripe, in order to ensure the plants flowering next year; during the second season from seed they will be in the greatest perfection.—P. G.

Rose Cuttings.—One of the most successful Rose raisers that we ever knew was the late Mr. C. J. Wistar, of Germantown. He took half-ripe shoots of Roses, and Rose shoots are half ripe just about the time the flowers are fading—and he would put them in pots of sand—the sand full to the brim, and even rounded. These pots were set on a gravel walk, in the open and broiling sun, and well watered every day; we are not sure that they had not water several times a day, for Mr. Wistar spent the most of his days in his garden; and, if we are not mistaken, they had saucers of water under them besides, and, according to the "Gardeners' Monthly," every cutting grew.

Removing Daisies from Lawns (see p. 46).—The only effectual way of getting rid of Daisies in lawns is to have them picked out by the hand; boys or women with short knives or weeders would get them out more rapidly than men. Spring is the best time to do the work; after the Daisies are all picked out, top-dress with some fine mould to fill up the holes, sow some lawn Grass seeds, bush-harrow, and then roll.—M.

—— Watson's lawn sand, if used in the quantity prescribed, will kill Daisies and Plantains and all other thick-leaved plants, and does no injury to the Grass. For small lawns, therefore, I can recommend a trial of this sand, but for large places the expense incurred in its use would be considerable. A pinch of agricultural salt put in the holes from which Daisies or Plantains have been cut out will kill the roots, and the Grass will soon cover the spaces again. Of course this can only be applicable to small lawns where Daisies and Plantains are not very numerous.—W. Tillery, *Welbeck.*

PLANTING OUT PLANTS RAISED IN POTS.

Many plants that grow and ripen their produce in the open air are annually raised in pots under glass for the purpose of giving them an early start, and in the case of Tomatoes, Capsicums, &c., it is the custom to grow two or more plants in a pot, and when the proper time arrives for planting them out to do so with the balls entire. I am convinced, however, that wherever it is necessary, owing to want of space, to grow several plants in a pot during the nursing period, they should always be divided and the roots opened out, when planted finally. As an illustration of what I mean, let us take a pot of Tomatoes, with, say two plants in it, one on each side of the pot; it may appear at first sight that the plants would receive less check if turned out without breaking the ball than if it were broken through the middle, and each plant planted singly, but there really is no comparison between the two modes of performing a very simple operation as regards the influence upon the future well-doing of the plants; and although I have instanced Tomatoes as furnishing a ready illustration, breaking the balls has perhaps less influence upon these than upon many other plants. I need not, I hope, say that I do not advocate any unnecessary mutilation of the roots, but the importance of giving them a proper direction outweighs any little inconvenience the plants may suffer from a root or two being injured. The fact is, when the soil is warm and moist, wounds heal with astounding rapidity, and new roots are formed in increased numbers without much check being given. I have watched the effect of this many times, and with various kinds of plants, and the advantage was always in favour of unlacing and disentangling the roots, even supposing a fibre or two were ruptured during the process. Whenever it is necessary to plant out anything that has become pot-bound, and it is not thought desirable to interfere with the ball, first make sure that the ball is thoroughly moist, and when planted, make the soil round it as firm as possible, leaving a slight cavity or basin when all is finished, to concentrate the moisture over the ball. When plants are planted from pots with hard balls in freshly turned-up soil, the water drains away too rapidly, and the plants perish from lack of moisture, even though plenty may have been poured round them. And this is one of the greatest objections which I have to planting out pot-bound plants of any kind without disentangling their roots. The work and difficulty of keeping plants put out under such circumstances supplied with water in a dry soil are increased immensely, whereas if the roots be properly opened out in planting, and laid in fresh moist soil, one or two good waterings will be all that is necessary; if dry weather follow, mulch thinly or thickly, according to the size of the plants and the nature of the soil. I am not now thinking or speaking of plants that are constantly grown in pots, and have occasionally, as they increase in size, to be shifted on into larger pots. The two cases are not identical, for whilst there may be instances in which it may be desirable to reduce and open out the roots a little when subjected to fresh potting, in the majority of instances with plants in vigorous growth, the less the ball is broken up the better; but then in growing plants in pots, it is easy to make the thin stratum of new soil between the ball and the sides of the pot firm, so that instead of draining off the water from the roots, it in reality holds plenty of moisture in suspension, which gives the desired encouragement to the growth of the plant.

Ramsey Abbey. E. Hobday.

It is too much the practice of those who call themselves "practical men" to sneer at those engaged in scientific pursuits, a habit more common formerly than at present. But we now hear quite too frequently the remark, "Oh, he is a man of science, but he is not a practical man." So far as I know scientific men, I find them eminently practical, accepting nothing upon trust, but always insisting upon the very bottom facts. The truth is, that all who are engaged in working with Nature, or, to take our own pursuits, all who are engaged with plant life in any manner, are working together for the general good. As horticulturists, we are largely indebted to those working with Nature in other forms. The geologist and chemist have done much for us, and we have very close relations with the ornithologist and the entomologist, and we find that every department of natural science somewhere touches and benefits every other. —Dr. Thurber.

A DOUBLE-SPATHED ARUM LILY.

(RICHARDIA ÆTHIOPICA).

DOUBLE-SPATHED ARADS are not uncommon, but we never met with an example of this duplication in the case of the Æthiopian Lily before, although we are told that the case is not quite unique. The one which we now figure was sent us by Mr. White, 26, Broad Street, Worcester, and, as much information in the matter of botany has been obtained by studying exceptions to Nature's laws, we figure this specimen in the hope that it may some day prove as useful as it is now interesting. The tendency to produce double spathes not unfrequently shows itself in the case of the Flamingo-plant (Anthurium Scherzerianum), and an example of this is figured in THE GARDEN for 1875, p. 481. B.

Double-spathed Arum Lily (Richardia æthiopica).

Hard to Please.—Dr. Goeppert, of Breslau, says that the practice of gardening is at present no less empirical than it was 2000 years ago, in spite of the constant loss of valuable plants. Nobody knows the chemical composition of our tropical Orchids, Heaths, Australian plants, Palms, &c. It is time to put a stop to this state of matters. It is necessary to analyse the earth in which the plants grow in their native state, and afterwards the plant itself. Thereby we shall be enabled to find out the best soil for each plant. In this manner agriculturists were once, and are still assisted by chemists; the botanists must also join the chemists, in order to establish a rational method of cultivating plants, which no doubt will turn out to be of great importance as regards the physiology of plants.—[The beautiful and valuable results obtained every day in the culture of flowers and fruits are clearly not enough for Dr. Goeppert, but we should like to see in how far the products of "gardening on chemical principles" would surpass them. We ought to know, however, all that chemistry can teach us of plant life, and, in short, we have much of it yet to learn. But it must not be forgotten that the cultivator's case is widely different from that of persons who have to make substances or compounds, discover new metals, or make practical use of chemical knowledge. Nature did nearly all that was needful for the gardener long ago, so far as cultivation is concerned. Her great laboratory has already given him all he needs in her many gardens, if he have the opportunity and the wit to profit by them. Dr. Goeppert looks at the matter in a narrow and pedantic way. Gardening may be "no less empirical than it was 2000 years ago," but in the face of such results as we see every day, such words as we quote can only be regarded as amusing.—ED. GARDEN.]

HOW LITTLE WE KNOW.

THE chemical transformation in the bodies of living plants, by which the most manifold and brilliant colours are produced, are almost entirely unknown to us. We see a flower pass through the entire scale of red, from the softest pink to the darkest purple-brown, but can give no explanation whatever of the mysterious process. We know, for instance, that the light of the sun greatly influences the colour of living plants, and experience has taught us that in most cases its total exclusion is equivalent to the absence of every colour, in other words, that it produces white leaves and blossoms. However, this rule is by no means without exception, as many roots, the roots of Al Khanna (Lawsonia alba) for instance, although buried in the soil, and completely secluded from the rays of the sun, possess a strong and vivid colour. We can explain neither the rule nor the exception; on the contrary, we know that, as far as lifeless matter is concerned, mineral or vegetable colours are weakened and gradually destroyed, rather than enhanced, by the action of the light. Our ignorance in this respect restricts our influence upon the coloration of flowers and blossoms, to a very modest and merely empirical one. A mere chance has led to the discovery that the infusion of sulphate of iron into the soil darkens the hue of certain plants which contain a considerable quantity of tannin; and cultivators have profited by this discovery as regards the culture of the Hydranges. But these examples are rare; and, as yet, we must renounce all claim to the control and influence of the natural course of things in this field. We may be able to change the colour of a plant or flower, by transferring it to other soil, but we are never sure of the result, and cannot give any scientific explanation of it. The fragrance of a flower is likewise produced by chemical action which hitherto has escaped our closest investigations; we see the result; we see that a flower, like the bee which transforms pollen into honey and wax, fabricates volatile oils out of air, water, and light; but the chemical process itself is a complete mystery to us. We only know that the slowness or rapidity of the evaporation of these oils is the cause of the stronger or weaker odour of the flower. The mode of their formation is a good example of the unlimited variability and manifold variety of vegetation's chemical powers. Many plants do not limit themselves to the formation of a certain volatile oil in their blossoms or flowers, but produce at the same time various kinds of oils in their different parts. The Orange tree, for instance, produces volatile oils in the leaves, flowers, and the rind of its fruit. A close investigation convinces us that these differ, not only in their smell and taste, but also in their weight, density, and other physical and chemical qualities; that, in short, they are different and independent substances, which cannot be mistaken for each other. The same plant must, therefore, possess three different organisms, by which it generates three entirely different substances out of the same ingredients. What chemical laboratory, be it ever so well furnished and skilfully managed, can boast of results in any respect so wonderful? And when will the time come that we may surprise even these mysteries of Nature's slow and patient, but mighty working, perceive their results, explain their causes, and—if possible, by our own appliances—repeat and renew the wonders of the Creation?—PROFESSOR AUGUST VOGEL.

Fine-leaved Trees and Shrubs on the Continent.—In a short trip through part of Belgium, Holland, and the Lower Rhine, I have been much pleased with the beauty and variety of the trees and shrubs with which I have casually met, many being rarely seen in Britain. Why this should be I do not quite see, as I should suppose that many of them would thrive in our climate, although they might not grow so luxuriantly as under warm sunshine. I refer specially to the varieties of Oaks and Maples, and to the immense number of variegated and golden-leaved trees and bushes, many of them of considerable size and age; such, for instance, as a variegated Horse Chestnut in the curious Dutch village of Brook. Then, again, besides Copper Beech and Hazel, which are very numerous and often of great size, I met with a Copper Birch (which was new to me), and also Copper Oaks. I do not think enough notice is taken of many of these in this country. So much attention has of late been given to Conifers that other trees have not received the notice to which they are entitled. Of these one meets with comparatively few in the localities I have been in, and in many cases they are far from flourishing, and only placed in their summer quarters when the severities of the winter have passed away.—W.

Wood Pavement.—Those interested in this pavement will find, in the Strand at the end of Newcastle Street, an example of what it is likely to become when a little decayed. Anything more offensive or unhealthy it would be difficult to devise.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Pits and Frames.—Where pot plants are grown in pits they must be kept well up to the glass, or they are apt to become "drawn." Plants in such structures are more liable to get neglected as regards water than in houses, where they can be more readily examined. Under such circumstances, too, insects are more likely to escape observation than in more open quarters, and, therefore, must be looked after more closely. In addition to supplying pot plants with sufficient water at the roots, it is also requisite, while active growth is progressing, to keep the floors of the pits or frames on which they stand well and regularly moistened, for if this be not attended to, the atmosphere during hot sunny weather becomes so dry that healthy growth is out of the question.

Cucumbers planted in frames early in the season will now need attention to keep them in bearing; they must be regularly watered and also syringed daily, applying the water to the under as well as the upper surface of the leaves, or they will be sure to become a prey to red spider. If their roots have got down into the manure of which the bed is made, they will not require much manure-water; but if that be not the case, and they appear to lack vigour, they will need help in this way once or twice a week. If frame Cucumbers be kept clear from insects, and sufficient sustenance be given them in this manner, they can be made to continue bearing from spring until autumn; if they be now too much crowded with shoots, thin them well out, and if a little fresh soil be added, and some of the shoots pegged down into it, they will quickly throw out roots, which will tend to greatly strengthen them.

Melons that are swelling their fruit should have sufficient water to support them, but be careful not to wet them much near the collar, for that might tend to induce canker. Such as are nearly ripe should have little water given them, or it will have a tendency to make the fruit crack, and also to impair its flavour. Those that were planted late in frames after these had been cleared of bedding plants should be encouraged to make growth, swell off, and ripen their fruit before the autumn gets too far advanced, or the fruit will be inferior in quality. See that a sufficiency of bottom-heat is kept up. Putting Grass mowings regularly round the sides of the bed will be found of service in this respect; and if they can be mixed with a portion of fresh stable manure, the heat will be kept up all the longer. Use the syringe often enough to keep down spider, for if this pest get a footing, the fruit will be both small and flavourless.

Peaches and Nectarines.—These should be gone over as often as they require it, removing all superabundant and ill-placed shoots. Take care, however to destroy none that will be required for bearing next year. Want of observation and forethought in this matter is the cause of so many of these trees being deficient in the way of bearing wood in the centre, the fruit being borne almost exclusively near the extremities of the branches, instead of being evenly distributed over the whole surface. Such shoots as are to be retained should now be all laid in close to the wall, an operation especially necessary in late localities, where there is a difficulty in getting the wood ripened over each tree; moreover, now and then, to see that the fruit is fully exposed to the sun, and where any symptoms of mildew, either on the leaves or fruit, show themselves, dust the tree, or at all events the affected parts, with flowers of sulphur, by means of the old-fashioned sulphur-puff, a contrivance as yet unsurpassed for the purpose: it is so simple in its construction that it cannot get out of order, and by its use the sulphur can be directed to any part where necessary, both to the upper and under surfaces of the leaves. Let the sulphur remain undisturbed four or five days before it is syringed off. Mildew is making its appearance upon Peaches later than usual; be assiduous in regularly syringing with water, and also in giving a copious supply to the roots; this is not only necessary to enable the fruit to attain its full size, but also to prepare good wood for another season. Where, in the early part of summer, trees are allowed to suffer from want of water, the growth necessarily gets stopped before its time, and when copious rains come during August these have the effect of causing them to push fresh growth, for the ripening of which there is neither sun nor time. I have no hesitation in saying that half the failures that occur in the cultivation of Peaches and Nectarines, particularly in small gardens, are due to the trees not receiving sufficient attention. With the exception of pruning and nailing, they are, comparatively speaking, often left to take their chance, or they are subjected to a course of alternate care and neglect, which results in a crop of fruit being obtained in such seasons as it is to be met with everywhere, but none at other times. There is also an immense difference in the size and quality of fruit borne by trees that receive the requisite attention as compared with that produced by those existing under neglected conditions.

Apricots.—These should also have sufficient young shoots nailed or tied in close to the wall to supply bearing wood evenly over the whole surface. These young shoots, when in absolute contact with the wall, will frequently set a crop of fruit when that upon spurs, which stand further away, is destroyed by spring frosts. The difference that 2 in. make in such matters would scarcely be credited by those who have not had an opportunity, or taken the trouble, to compare the results.

Pears and Plums on walls should have their summer shoots removed as soon as they have ceased to grow, a state at which the trees will arrive sooner or later, according to the earliness or lateness of the locality in which they are grown. The object in taking these summer shoots off is to give the tree a better opportunity to form fruit-buds for the ensuing year, and to expose these to the ripening influence of sun and air; but if such shoots be removed too soon, *i.e.*, whilst there is a considerable flow of sap in the trees, more harm than good will be done, as the trees will start again into growth. The usual way is to break the breast-wood (for that is the term usually applied to these summer shoots) off with the thumb laid across the blade of the pruning-knife, or a stout pair of ordinary nippers may be used for the purpose, severing the shoots at about half or three-quarters of an inch above the point from which they spring.

Kitchen Garden.—Old Strawberry beds that have become exhausted, should be dug over as soon as the fruit is gathered. The best method is to cut them off with the spade just below the collar, and bury them as the work goes on, opening a trench for the purpose sufficiently wide at the commencement. The old tops thus dug under will benefit the ground, especially if it be of a heavy character. There is no better crop to follow Strawberries, when dug up at this time of the year, than Turnips, which should be sown as soon as rain falls after the ground is prepared. Continue sowing successions of Lettuces in order to keep up the requisite supply; the smaller Cabbage kinds, such as Tom Thumb, will now be found more suitable than the Cos varieties. A little Endive should also now be sown. Persevere in the destruction of weeds as fast as they appear; the recent hot weather has been favourable for eradicating them, if the hoe have been kept going, as it should have been, between growing crops and bush fruits. Amongst the latter weeds are often neglected, from whence, if allowed to seed there, they spread on to the more open spaces, and are a source of endless trouble. It is almost useless keeping one part of a garden clean if another portion be left uncared for. When the weather is at all favourable continue to plant out autumn and winter crops, but if the plants have been prepared by previously pricking out in a nursery bed of rich loose soil so that they will move well with plenty of roots, or even if well thinned in the seed-bed where sown, they may be planted in dry weather, first giving them a good soaking and repeating it when planted. If the weather keep dry, except where the soil is of a more than commonly moist nature, many plants will require copious watering, but when it is given, in all cases apply enough to moisten the earth as deep as the roots descend; surface watering is worse than nothing. Such things as Peas and Runner Beans will be much benefited by mulching with littery manure, the fertilising elements from which will be washed down to the roots, and the covering it affords to the surface will prevent the ground from drying so quickly.

Conservatories.

The numerous choice stove plants available at this season for decorating both greenhouses and conservatories, will afford more richness and variety, both in foliage and flower, than is attainable in these comparatively cool houses at any other season of the year; and as it will not be safe to allow choice specimens of these to remain in such structures for any lengthened period, it will be well to use them as extensively as possible during the next month or two, in order that the pleasure to be derived from them may be enjoyed without having to go into the strong moist heat of the stove to view them. By means of frequent changes and occasional re-arrangement much interest may be imparted and fresh effects produced in such houses; and, in addition to all this, the plants will be greatly benefited by being turned and changed about, so as to expose a fresh side to the light. Were this more attended to, less training and tying would be requisite, and the use of objectionable stakes puncturing the ball might then in a great measure be dispensed with. Before placing choice specimens of stove plants in the conservatory, however, see that they are properly hardened, and select for them the best positions for showing them off to advantage, taking care at the same time that they are out of the way of cold draughts, and that they do not stand where air when admitted would come in immediate contact with them. To ensure their safety, keep them as dry at the root as

the plants will bear without flagging or shedding their flowers—thus treated they will endure the change much better than if they were freely supplied with water; wet and cold, at the same time, having a paralysing effect on them. Keep roof-climbers properly thinned and regulated, otherwise, owing to the rapid growth which they are now making they will soon become entangled and lose much of their grace and beauty. It is rare that conservatory borders are of sufficient depth or extent to keep in health such fast-growing, free-flowering plants as Begonias, Passifloras, Tacsonias, &c.; and where any of these are at all pinched for root-room, the deficiency in soil must be made up by giving an abundant supply of water, or red spider will soon make its appearance, and when once this pest becomes established, its removal is a work of some difficulty. Where it can be done without being objectionable, a good syringing will do much to check its ravages. In order to counteract the extreme dryness usual in lofty conservatories, every opportunity should be taken to damp the borders well, and to pour water about in every available place where it is not likely to be objectionable or cause inconvenience. Where this cannot be done, a gentle bedewing overhead has a refreshing and beneficial effect.

The African Lily (Agapanthus umbellatus) is one of the best plants which it is possible to have for conservatory decoration at this season, as it appears perfectly indifferent whether the atmosphere be dry or moist so long as it is afforded plenty of water at the roots, which may easily be done by setting their pots in pans of water. Fed in this way, they last in bloom a long time, and go on forming fresh growth without check or hindrance. Any that are not showing flowers, or that have had them cut, may at once be divided, if an increase of stock be desired. This can be best done by severing the ball with a sharp spade, as it is a difficult matter to accomplish it in any other way, on account of the great number of roots that interlace each other. In potting they can scarcely have a soil too rich and good, or too much room to grow in. A stiff, fibry loam, with a fifth part of well-decomposed manure, will suit them admirably; and when potted they should be placed in some shady, sheltered position, where they can be kept well watered, in order to give them a start, after which they will be benefited by more sun and light.

Japanese Lilies.—The earliest of these will now be coming into bloom, and should have every assistance afforded them by giving liberal supplies of manure water whenever they become dry. Frequent and weak applications are much better than occasional strong doses; and in all cases where liquid manure is made use of, it should be given in that way.

Humea elegans.—The stately beauty of the Humea elegans at this season, when clothed with its rich, brown, feathery inflorescence, is most striking, and few plants impart a more dressy appearance to a house, or are more useful and durable than it is when judiciously introduced amongst other plants. It obviates flatness and uniformity—matters to be avoided in all well-managed conservatories. In order to keep its leaves fresh and healthy the roots must be kept constantly moist. To do this it will be requisite to water at least once a day, so rapidly does it absorb water to support the large heads of bloom which it invariably carries when well grown. To get plants of it for next season, seed should be sown at once, or the produce will not have time to attain a sufficient size to be useful and effective. The variety known as H. elegans purpurea, owing to its greater warmth of colour, is the most desirable to grow. Of this the seed should be sown in pans containing moist, rich soil, and, covered with a glass, which should be kept shaded till the seed germinates.

Begonias.—Few flowering plants make a more brilliant display, or are better adapted for conservatory decoration at this season, than tuberous-rooted Begonias, most of which are as hardy and easily grown as a Fuchsia or Pelargonium. Those who are not so fortunate as to possess a few of the best kinds of them, should lose no time in procuring them, and at once set about their propagation, which if not done early is sure to result in failure, as they have not sufficient time to form tubers before winter sets in. Cuttings of them do best put in under a handlight, placed on a cool, moist bottom, such as the natural soil, or a bed of coal ashes, and as it is best to winter them in the pots in which they are struck without any further disturbance, three or four put round the edge of a 48-sized pot will be found to be enough. All the attention which they require is keeping them properly shaded, and occasionally damped over, so as to prevent them from flagging, and to encourage the formation of roots which they soon emit under the favourable conditions. In taking the cuttings, select such side-shoots as have little flower on them, and before putting them in, nip out any buds that may be showing themselves. Most of the tuberous-rooted Begonias come freely from seed, and by sowing at once good flowering plants may be obtained for use next summer and autumn, although they would have been stronger and better had they been inserted earlier. The seed, which should be sown in pans filled with moist soil, should be kept close under a handlight in any cool house, where it will soon germinate. After the young plants are up they may be treated as recommended for the cuttings. The best place in which to grow plants of these tuberous-rooted Begonias is a cool pit or frame where they are not subjected to much sun, and where they can have plenty of atmospheric moisture, in which they greatly delight. If set on pieces of slate on the natural ground, this can be readily afforded them by means of heavy syringings, or an occasional watering overhead, using a fine-rosed watering-pot for the purpose. If well-drained they can scarcely have too much water at the root while growing and blooming, but the supply should be gradually withheld in the autumn as the tops show signs of ripening off. The most suitable place in which to winter them is the back shelf of a greenhouse, where they can be kept free from drip; or any cool, dry pit will answer the purpose equally well.

Zonal Pelargoniums.—Old plants of these started early will now be coming into bloom, and where at all cramped for pot-room (in which state they always flower with greater freedom than when they have plenty of room), frequent waterings of manure-water will be of the greatest assistance to them. This is at all times better than giving them a rich, stimulating soil and large pots to grow in, as in that case they produce little else than leaves, and are of no value as decorative plants. By confining them to moderate-sized pots, and giving them only good fibry loam to grow in, the wood which they make is sure to be short-jointed and solid, in which condition bloom is produced with the greatest freedom. The great advantage possessed by manure-water is that it can be administered just at the time when plants most require assistance, and that is when they are carrying a large head of bloom; whereas, if potted in rich soil, the stimulus is given at the wrong time, and fails when it is most needed, and when the roots cannot respond to the demands made on them, having already used up in strong, rank growth what they had. In order to keep up a succession of these useful summer-blooming plants, a portion of the stock should have the blooms picked off and be set in an open, sunny position out-of-doors, plunged, and well attended to with water. Treated in this way they flower in the freest manner possible directly they are placed under glass, and go on producing blossoms for a great length of time. In addition to their great value as summer-blooming plants, they may, with a little management, be had in flower in the winter, a time when such brilliant-coloured blossoms as Zonal Pelargoniums produce are sure to be most acceptable. Autumn, or very early spring-struck plants are best for the purpose, and these should at once be potted in moderate-sized pots, in rather poor loamy soil than otherwise, the object being to prevent them running to leaf when placed in heat, which they would be sure to do if they had rich soil or much root-room. When potted, they should be plunged in a bed of coal ashes, where they can be fully exposed to the sun, that the growth they make may be close and firm, as it is only such from which flowers can be obtained in the winter. Stop any strong shoots that break away and appear likely to take the lead, so as to keep the plants in shape and induce them to form fresh growth; but this stopping should not be continued after the middle or end of August at the latest. Old stunted plants of the double varieties, when placed in dry heat in the winter, yield flowers most freely, and are more valuable for cutting than the single kinds, on account of their lasting so much better in that state. Any that can be spared may now be prepared for the purpose by standing them out-of-doors, and keeping them rather dry at the root, so as to induce a hard, woody growth, from which there will be no difficulty in getting a fair amount of bloom as soon as they are subjected to house treatment in the autumn. Madame Lemoine is one of the best for producing flowers late, the lovely soft pink colour of which blends well with Eucharis, white Camellias, double Primulas, or other light blooms that may then be obtained for bouquet making.
—J. Sheppard, *Woolverstone Park.*

Orchids.

Some of the Burmese and other deciduous Dendrobiums will now have finished their growth, but as the exact stage in which each plant now happens to be must depend in a great measure on the temperature in which it has been grown, and the amount of air that has been admitted, the cultivator must make sure that the new pseudo-bulbs are completed before putting the plants into their resting quarters. The last received importation of D. Wardianum, D. crassinode, &c., has been widely distributed, and the plants have been subjected to various kinds of treatment, some of them having been grown in the cold Odontoglossum house, others in the intermediate house, and many in the East Indian house, circumstances under which all the plants seem to have done well, but those grown in the intermediate house appear to be the soundest and healthiest. The future condition and flowering of the plants will, therefore, have to be determined by the treatment they henceforth receive. Those

which have been grown in baskets will be found to be much less difficult to manage than those grown in pots. Any of the Dendrobiums which have completed their growth should be sponged over, in order to remove such insects as may be upon them, and which would increase rapidly on being placed in a dry house. The plants, if in baskets or on blocks, should then be suspended from the roof of a dry, cool, well-ventilated house (not necessarily an Orchid house) in full sunshine, and only enough water should be given them to prevent their shrivelling; if in pots, they should be placed on the sunny side of the house on a trellis-work stage, or on a shelf, and treated similarly. The leaves will soon turn yellow, but they should not on any account be cut off; if left alone they will fall off naturally, and the pseudo-bulbs, being thoroughly ripened by the sun, will produce flowers freely. In this manner the plants should be kept, giving them as little water as possible, until they again begin to grow, when they should have more water and a higher temperature. D. Wardianum seems so constituted as to be better able to adapt itself to circumstances than most other Orchids, for if the plants be not (and sometimes if they be) removed to a cool, dry house as soon as they have completed their pseudo-bulbs, they start at once again into new growth in spite of every means that may be taken to prevent it; if the plants, therefore, persist in growing, it is best to place them again in a warm house and to treat them as growing plants until the growth is finished, when they may be rested in the ordinary way. This second growth is frequently made by the Dendrobium mentioned, as well as by D. Falconeri and a few others, without apparent injury to the plants; indeed, they are sometimes lost by too strict means being resorted to in order to prevent it. Sunshine is highly important to these plants, for if by its means the pseudo-bulbs be not well ripened they frequently produce growth instead of flower from the joints.—James O'Brien.

Floral Decorations for July.

Little need be said about the flowers which the month of July affords to the decorator, inasmuch as they are sufficiently numerous to please the most fastidious. This season has been such an unusually late one, that the present month has this year the benefit of several flowers which, in ordinary years, would have been out of bloom before the end of June. The Larkspur is the most important addition to previous lists of blue and purple; it occurs in nearly every shade of these two colours, and is invaluable, owing to its lasting properties when out of water without fading. I have seen many pretty colour-effects produced by mounting each separate flower upon a wire and studding them about in different parts of a vase, especially amongst a few Grasses, to form a light top to a vase; nevertheless, I do not approve of the practice sufficiently to have recourse to it in my own decorations. It borders too closely on mutilation of flowers, to which I am decidedly averse, and of which I lately saw an instance in some pieces of an apparently new flower in a bridal bouquet, which, on close examination, turned out to be Hoya bella with the pink centre cut out! This reminds me of another instance of pulling a flower-truss to pieces which I noticed at a recent display of table decorations, where single flowers of Hoya carnosa were stuck upon "stubs" about the flat base of a large vase, with some 3 in. of the black wire visible. It can be only necessary to call attention to these extravagances in flower-mounting to insure their condemnation by every one possessed of good taste. There are many flowers now in bloom, such as Jasmines, the whole order of Scrophulariaceæ, and many of the Boraginaceæ and Labiatæ, which well repay one for the trouble of gumming the corolla into the calyx, a practice which prevents the coloured portion of the tubular blossoms from falling out of their green unornamental calyx, and thus spoiling the bouquet. The following is a list of the various colours and the flowers which furnish them:—

Blue—Corn-flower, Gentianella, Iris, Larkspur, Myosotis, Nemophila, Pansy.
Purple—Heliotrope, Iris, Larkspur, Lupine, Pansy, Phlox, Sweet Pea, Verbena.
Mauve—Heath, Iris, Pansy.
Pink—Antirrhinum, Begonia, Bouvardia, Carnation, Fancy Pelargonium, Fuchsia, Hydrangea, Oleander, Phlox, Pyrethrum, Rhodanthe, Rose, Sweet and Everlasting Peas, Sweet William, Verbena, Willow Herb, Zonal Pelargonium.
Crimson.—Antirrhinum, Bachelor's-button, Bouvardia, Foxglove, Fuchsia, Phlox, Pink, Potentilla, Pyrethrum, Ragged Robin, Rose, Spiræa, Sweet and Everlasting Peas, Sweet William, Verbena.
Maroon.—Clove, Pink, Carnation.
Scarlet.—Bouvardia, Carnation, Potentilla, Poppy, Salvia, Tropæolum, Verbena, Zonal Pelargonium.
Orange.—Carnation, Erysimum, Eschscholtzia, Lily, Potentilla, Rose.
Yellow.—Alyssum, Antirrhinum, Buttercup, Calceolaria, Eschscholtzia, Genista, Iris, Jasmine, Potentilla, Rocket, Rose, St. John's Wort, Water Lily.
White.—Alyssum, Antirrhinum, Aponogeton, Arabis, Arum, Begonia, Bouvardia, Buttercup, Carnation, Deutzia, Eucharis, Fancy Pelargonium, Foxglove, Gardenia, Heath, Iberis, Jasmine, Lily, Myrtle, Mock Orange, Myosotis, Phlox, Pink, Rhodanthe, Spiræa, Stephanotis, Sweet and Everlasting Peas, Water Lily, Woodruff.

—W. T. T.

PLATE XXIX.

THE ABELIAS.

(WITH A COLOURED FIGURE OF ABELIA TRIFLORA).

We have been induced to figure Abelia triflora in The Garden from seeing what a beautiful flowering shrub it forms at Glasnevin, where the climate is by no means so favourable as in many other districts. The specimen at Glasnevin, which is about 8 ft. high and nearly as much through, flowers for many weeks during the summer, and the blooms are delicately fragrant; altogether we have not seen a more beautiful shrub. It may be seen at Kew, growing on the wall near the herbaceous plants, but it would probably prove perfectly hardy around London as well as near Dublin, especially on warm favourable soils. We presume it may be obtained in our large tree and shrub nurseries—certainly nothing better deserves a place therein.

The genus Abelia belongs to the Honeysuckle family, and is closely allied in structural characters to the elegant little trailer, Linnæa borealis. Indeed, it has been proposed by a German botanist, Dr. Vatke, to incorporate Abelia with Linnæa; but, independently of the difference in habit, there are very good technical characters separating them. The principal distinguishing character resides in the calyx, the sepals of which persist and enlarge after the corolla has fallen away, and crown the ripe fruit. There are only about four or five species of Abelia, and they are found in widely distant parts of the world, namely, Northern India, China, and Japan, and two or three in Mexico. The following are the species worth cultivating:—

Fragrant Abelia (A. triflora).—The subject of the plate is a native of the mountains of Northern India, between 6000 ft. and 9000 ft. above the sea, where it forms a small tree or shrub, according to the elevation and situation of the locality. We have not a large selection of hardy trees and shrubs from the mountains of India, but most of them are really valuable: such are the Deodar, Pinus excelsa, and Leycesteria formosa, a shrub belonging to the same family as the Abelias. The Fragrant Abelia is no exception to this rule, but although it has been in cultivation in this country nearly thirty years, it is rarely seen outside of a botanic garden. Some idea of its ornamental character may be obtained from the accompanying portrait, and any one who has once seen it covered with a profusion of its fragrant and pretty, though small, flowers will be anxious to possess it. With us it forms a handsome, slender-branched, deciduous shrub, flowering in May and June. A fine specimen of it may be seen on the east side of the wall bounding the "herbaceous ground" at Kew. The long, slender, fringed calyx lobes crowning the seed-vessel give the plant a very pleasing appearance for months after the corollas have fallen away. The name triflora does not at first sight appear to be an appropriate one, but it has reference to the three-flowered branches of the inflorescence. There is an imperfect figure of it in Paxton's "Flower Garden" for 1852-3, drawn from living specimens received from Mr. Moore, of Glasnevin. Mr. Moore states that it was then nicely in flower in the open border, where it had stood in front of one of the conservatories without protection since it was planted, four years previously. Major Madden sent the seeds thither from Simla in 1847.

Large-flowered Abelia (A. uniflora, Bot. Mag., t. 4694).—This species was sent by Mr. Fortune from North China to Messrs. Standish and Noble, some years ago, and it was figured in the Bot. Mag. in 1852, t. 4694. The name uniflora is inappropriate, inasmuch as the peduncles are frequently two or three-flowered. In everything except structure this differs very widely from the shrub figured. It has large, funnel-shaped flowers, with a broad tube, not unlike those of some of the smaller Javanese Rhododendrons, white tinged with pink, about 1½ in. long by 1 in. across the mouth, and borne on short stalks, so that the flower and stalk together do not equal the leaves. In this, usually only two of the calyx-lobes persist and grow

Supplement to *The Garden*, Office 37, Southampton Street, Covent Garden, London, W.C.

THE FRAGRANT ABELIA (A. TRIFLORA)

out, and they are oblong, entire, about half an inch long, and tinged with reddish-brown. In habit this shrub is low and bushy, with slender, usually opposite, branches, and broadly-lanceolate, distantly toothed, rather thick, leathery, dark green leaves. Of its hardiness I can say nothing from experience, for, although it was introduced so long ago, I do not remember having seen it in the open air. But it is stated in the Bot. Mag. that it withstood the winter of 1851-2 in the Bagshot Nurseries without protection, and promised to be not only a hardy but an ornamental shrub. Whether it disappointed the hopes it first raised I cannot say, but the allied Diervillas (Weigelas) are doubtless handsomer and more floriferous, and perhaps hardier It may be mentioned that the shape of the corolla approaches that of Diervilla. There is a plant very much like this, save that it is smaller in all parts, figured in Siebold and Zuccarini's "Flora Japonica," vol. i., t. 31, under the name of A. serrata. In this the leaves and flowers are less than half the size of those represented in the Bot. Mag., but cultivation and selection of a superior variety may account for this. Siebold's plant is described as inhabiting the mountains of Japan in dry, open places, usually associated with Azaleas, Vacciniums, Andromedas, Hydrangeas, &c., up to an elevation of 1800 ft. above the sea.

Copious-flowering Abelia (A. floribunda, Bot. Mag., t. 4316).—A greenhouse shrub, and the showiest species of the genus known. It is a dwarf, bushy plant, with small, ovate, toothed leaves usually less than 1 in. long, and long, narrow, tubular flowers of a bright purple-red colour. In this species all five of the sepals persist, and are of nearly equal size, oblong, and fringed on the margin, and the corolla has a long, slender tube, as in Bouvardia; not broad, as in the preceding species. The native country of this is Mexico, where it grows on the Peak of Orizaba up to the altitude of 10,000 ft. above the level of the sea. It was introduced into Europe through the Belgian nurserymen, and reached this country about the year 1847. For some time it bore the name of Vesalea floribunda in gardens.

A. rupestris (Bot. Reg., vol. xxxii., t. 8), judging from the figure, is a somewhat dingy-flowered species in the way of A. grandiflora but with much smaller flowers clustered towards the ends of the very slender, pendent branches; it has broad, persistent calyx-lobes, all five of which are developed. Mr. Fortune found it amongst rocks on the Chamoo Hills, China, and described it as a fine dwarf shrub. It is said to differ from the original species, A. chinensis, figured and described by Brown in an "Appendix to Abel's Journey in China," in having no involucre and other trifling particulars, but I have failed to discover any good character to separate them. Finally there is the A. spathulata, of Siebold and Zuccarini, of which I have seen only a fragmentary dried specimen, and the figure in their "Flora Japonica." It appears to differ only in the shape of its leaves from their A. serrata. W. B. HEMSLEY.

The Silicium of Plants.—We ("Academy") pointed out some time since the analogy in respect to chemical character which exists between carbon and silicium, and to the high probability that a portion at least of the silica found in the ash of a plant may be due to the combination of organic compounds containing silicium. Ladenburg's search for a silicium-cellulose or an allied body, although incomplete, favoured this view. We find, however, that Professor Wilson, of the Medical Department of Washington University, Baltimore, has solved the very difficult question as to the manner in which silicium is taken up. He makes the astonishing announcement ("American Journal of Science," May, 1876), that "free silica is the only condition in which it (*i.e.*, silica) can enter the plant." He has examined the stalk of wheat grown on the infusorial earth of Chesapeake Bay, and finds its silicious portion to consist wholly of the silicious shields of Diatomaceæ. This function, it appears, however, is not extended to the "outer husk" of every diatom; two forms, the names of which should be put on record, Actinocyclus Ehrenbergi and Actinoptychus undulatus, were absent. "They, and there probably may be other forms, are too large to enter the root capillaries."

Sugar from Melons.—It is stated that the experiment is to be tried in Sacramento City of manufacturing sugar from Melons. It has, for many years past, been considered that there is more saccharine matter in them than in Beets, and that the establishment of a factory will furnish a market for the many hundred tons of Melons that are usually left to rot in the fields after the market becomes glutted.

THE language of flowers, which is common in Turkey, owes its introduction into Europe to Lady Mary Wortley Montagu. The Persian personifies the Rose, and makes it the mistress of the nightingale, to which, in the return of spring, he tells his amorous pains; the Hindoo dedicates flowers to his divinity, whose various attributes they represent to his imagination; but it is in Turkey alone, that we find this mysterious language to which there exists nothing similar among other oriental nations.—W.

THE LIBRARY.

NOTES ON COLLECTING AND PRESERVING NATURAL HISTORY OBJECTS.*

THIS is a very useful little book with a distinct aim, which is well carried out. It is written by a dozen or more competent naturalists, each of whom gives trustworthy information on that branch of natural history with which he is most familiar. Thus geological specimens—how to seek for them—where to find them—and how to arrange them when found—are well treated of by Mr. J. E. Taylor; bones, by Mr. E. F. Lewin; birds' eggs, by Mr. T. Southwell; butterflies and moths, by Dr. Knaggs; beetles, by Mr. E. C. Rye; hymenoptera, by Mr. J. B. Bridgman; land and freshwater shells, by Prof. Tate; flowering plants, by Mr. Britten; Grasses, by Prof. Buckman; Mosses, by Dr. Braithwaite; fungi, by Mr. Worthington Smith; Lichens, by the Rev. Mr. Crombie; and seaweeds, by Mr. W. H. Grattann. The following extract from Mr. Britten's essay will serve to show the way in which the work has been done:—

Preserving Flowering Plants and Ferns.

The kindred subjects of the collection of plants and the arrangement in the herbarium have been treated of over and over again, and it might almost seem as though nothing further need be said upon the matter. But in spite of all that has been written, it cannot be said that anything like uniform excellence has been attained, either in the collecting or drying of specimens; on the contrary, much carelessness is still exhibited in both particulars. The aim to be kept in view is to obtain as perfect a specimen as possible; that is, one showing every part of the plant—root, leaves, flowers, and fruit. It is not always practicable to show all these upon one specimen, and in such cases the requisite number must be selected to carry out this plan. The wretched scraps with which some collectors content themselves are not only useless to their owners, but annoyances to every one who has to do with them, or who is requested to pronounce an opinion upon them.

To begin at the beginning, how rarely do we find the embryo of any species represented in a collection of dried plants? It ought to be there, not only as essential to the complete presentment of the history of the species, but as in certain cases indicating relationships which are not apparent when the plant is more advanced. Those who have not observed them would be surprised to find how much variety of form exists in the cotyledons alone, from the fleshy cotyledons of many of the Leguminosæ, the Horse Chestnut, &c., to the foliaceous ones, or seed-leaves, of other plants. Among the latter may be noted and compared the lobed or palmate cotyledons of the Lime, the glossy dark green, somewhat kidney-shaped ones of the Beech, and the pinnatifid ones of the common garden Cress (Lepidium sativum); the obcordate ones of the Mustard or Radish; the long, narrow, thin ones of the Sycamore; the sinuous or corrugated and bilobed one of the Walnut; and many more which will occur to the observant reader, or which may be collected by any one who will take the trouble to watch the germination of plants: and by making such collections, unexpected discoveries may arise, which will yet further confirm what has been said about the variety in form and structure even in these beginnings of growth. Plants which are, on account of their general affinities, reckoned among the dicotyledons, may be found on investigation to have but one cotyledon, as Dr. Dickson observed to be the case with two of our Butterworts, Pinguicula vulgaris and P. grandiflora, the third species, P. lusitanica, being dicotyledonous; or even to be acotyledonous, as is the case with the Dodder (Cuscuta). In the latter-named genus, it is of importance to collect young specimens, as showing that the plant, although parasitic as soon as it comes in contact with a suitable foster-plant, is of independent origin. A search among young plants will no doubt lead to the discovery of some abnormalities, such as tricotyledonous embryos and other irregularities. Of some plants, such as the Furze, the true leaves can only be found at an early stage of growth; in others, much variation may be noted in many points between the first leaves and the more perfect ones which succeed them; some, as the Holly, at once developing leaves similar to those which are produced throughout the life of the plant, and others going through many modifications before the ultimate shape is attained, as in the Ash, Elder, Ivy, Maple, &c.

The roots or rhizomes also require to be much more fully represented and carefully collected than is usually the case. In every instance where the size of the plant does not prevent, the subterranean and subaqueous part should be carefully procured and pre-

* "Notes on Collecting and Preserving Natural History Objects." London: Hardwicke & Bogue, 192, Piccadilly, W.

served. Dr. Trimen has lately directed attention to the corm-like tubers of the Water Plantain (Alisma), closely resembling those of the Arrowhead (Sagittaria), which have been described and figured by Nolte, but "do not seem to have been observed, or at least properly understood, in this country. They are buds remaining dormant through the winter, and containing a store of nutriment, to be employed in the development of the new plant from the tuber in the next year." Similar bulbs are developed by the Frogbit (Hydrocharis). In determining many Grasses and rushes, it is of importance to ascertain whether the rhizome is creeping or cæspitose, and it is therefore essential to collect good specimens. In the case of such plants as the Coral-wort (Dentaria bulbifera) and Tooth-wort (Lathræa squamaria), the root-stocks are eminently characteristic. Of such parasites as the Broomrapes (Orobanche), some care is requisite in obtaining specimens in which the connection between the parasite and its foster-plant may be preserved and shown. The absence or presence of tubers should also be noted, and if present, they must be represented.

Passing on to the leaves, we may note the importance of obtaining in every case the root-leaves of each species. These are often very different in form from the stem-leaves, as in such species as the Hairbell (Campanula rotundifolia), Pimpinella saxifraga, the Earth-nut (Bunium flexuosum), and many more; in some instances, as in the Jersey Bugloss (Echium plantagineum), they at once characterise the species. Still more important are these lower leaves in the case of water-plants; in the Arrowhead (Sagittaria), for example, they are narrow, and resemble those of the Bur-reed (Sparganium); and in the Water Plantain (Alisma plantago), the submerged leaves are equally different from those which rise out of the water. This difference is still more noticeable in the case of the aquatic Ranunculi, where a knowledge of the submerged leaves is essential to the discrimination of the various forms or species.

Where practicable, the whole plant should be collected for the herbarium; but when, from its size, this cannot be accomplished, leaves from the root, the centre of the main stem, and the lateral branches, should be taken. As to the stem itself, that must be represented; in the Rubi, indeed, it is essential. "To judge properly of a Bramble from a preserved specimen," says Professor Babington, "we require a piece of the middle of the stem with more than one leaf; the base and tip of the stem are also desirable, likewise a piece of the old stem with the flowering shoot attached to it; the panicle with flowers, and the fruit. We likewise want to know the direction of the stem throughout, of the leaflets, and of the calyx; also the shape of the petals and the colour of the styles; a note of these should be made when the specimen is gathered."

Passing on to the flowers, we shall find it necessary to represent them in almost every stage, from the bud to the perfecting of the fruit. It is of course in most cases possible to select an example in such a state as to show upon the same plant buds, flowers, and fruits; but where this is not the case, each of these particulars must be supplemented by additional specimens. The turn which botanical investigation has recently taken towards the study of the phenomena connected with fertilisation has given the collector another subject to which his attention may be profitably directed. It has been observed that in some plants the stamens are developed before the pistils; in others, the pistils are matured before the stamens; while in yet a third set, stamens and pistils are simultaneously perfected. These three groups of plants are termed respectively protandrous, protogynous, and cynacmic, and a very little observation will show that examples of each are sufficiently common. Then in diœcious and monœcious plants, both male and female flowers must be collected, and in some cases, as in the Willows, four specimens are necessary to the complete presentment of the species, showing respectively the male and female catkins, the leaves and the fruit. Some plants produce two distinct forms of blossom, as is noticeable in the Violets and the Wood-sorrel, one being conspicuous and usually barren, the other insignificant and often apetalous, but producing perfect fruit. The pollen will afford occupation to the microscopist; the researches of Mr. Gulliver and Mr. Charles Bailey have demonstrated that important distinguishing characters are in some instances furnished by it. While on this point it may be suggested that it is convenient in many cases to collect several specimens of the flowers alone, which, when dried, should be placed in a small envelope or capsule, and attached to the sheet on which the plant is represented. In the event of any examination which may be requisite after the plant is dried, these detached blossoms will be found very useful, and will prevent the necessity of damaging the specimen. In the case of such plants as shed their corollas very readily, as the Speedwells, it is as well to put them in press as soon as collected; and the colour of many may be retained by the same means. The fruits and seeds of plants are too generally neglected by amateur collectors, but are essential to the completeness of a specimen. It may be found practically convenient to keep these in a separate place, and detached from the plant; and in many cases of dried fruits it is advisable to sort them into their places without previous pressing. By this means the modes of dehiscence will readily be seen: pulpy and succulent fruits should be preserved in spirit. In such plants as the species of Sea Sandwort (Lepigonum), and some Chenopodia, important specific characters are drawn from the seed; as they are from the pods of Melilotus and the fruits of Agrimonia. In collecting Ferns, well-fruited fronds must be selected, as it is impossible to determine specimens without fructification. Grasses should be selected when in flower and fruit, but must not be allowed to attain too great an age before they are collected.

We have been speaking so far of the things to be collected, and space will not allow us to dilate at any length upon the apparatus necessary to that end. Nor indeed is this necessary; a good-sized vasculum, with one or two smaller boxes for the pocket, in which the more delicate plants may be preserved; a strong pocket-knife or small trowel, for procuring roots, and a hooked stick wherewith to fish out water-plants, or pull down branches, are the principal things required. To any one residing any length of time, or even only for a few days, in a district, a "London Catalogue" is an important acquisition, in which should be marked off all the species met with; by this means the flora of the neighbourhood is ascertained at a very slight expenditure of time and trouble. It is not advisable to collect too many plants at once, or to crowd the vasculum, unless under exceptional circumstances; nor should the desire to possess rare plants tend, as is too often the case, to the neglect and exclusion of commoner ones. A careful and observant collector will frequently meet with forms which deviate more or less from the accepted type of a species. When these appear to offer any marked characters, they should be noted; and in all cases it is well to preserve any forms which, from external circumstances, have a different appearance from the normal state. The differences produced by soil and situation alone are very considerable; and though the essential characters are usually to be discerned, the interest and value of a herbarium are very much increased by a selection of examples showing the range of a species. Campanula glomerata offers a good example of this. In damp meadows it is from 1 ft. to 2 ft. high, with a large, spreading, terminal head of blossoms, while on chalk downs it does not attain more than as many inches, with only one or two flowers; in this state it was described by Withering as a Gentian, under the name of Gentiana collina; and the same author gives as Campanula unifiora a one-flowered mountain state of the Hairbell (C. rotundifolia).

First of all, we must make all necessary preparation for

Mounting, the first essential to which is paper. Much of the neatness of a herbarium depends upon its uniformity, so that it is desirable to lay down a definite plan at the beginning and to act up to it consistently. Amateurs often spoil specimens which they have collected and preserved with considerable care by transferring them from one sheet to another; from books—but it is only *very* amateur botanists who keep their plants in this way!—to loose sheets, from small paper to large, and so on; each change being attended with some slight damage to the specimen so treated. It is, I believe, the common practice on the Continent to keep the specimens loose in folded sheets of paper; but this plan is not followed in England, and although advantageous, as permitting the fullest examination of the plant, it is attended with much risk to the specimens in the way of breakage; so that we may consider it settled that we are going to fasten our plant to a sheet of paper. This must be rather stout, and large enough to admit the full representation of the species. The sheets used at the Kew Herbarium are 16½ in. long by 10½ in. wide; those employed at the British Museum are 17½ in. by 11½ in.; but the former will be found amply sufficient for our purpose. The next consideration is the means by which the specimens are to be secured, which are more various than might at first be supposed. Some persons sew them to the paper; others place straps over them, which are secured with small pins; but the choice practically lies between fixing the whole specimen to the paper with gum, paste, or glue, or securing it with straps of gummed paper. The former plan, which is that adopted at our great public herbaria, is certainly better for specimens which are likely to be much consulted; but the latter is in some respects more satisfactory, if somewhat tedious, as it admits the removal of the plant to another sheet if necessary, and delicate portions, such as thin petals or leaves, are not injured as they are when gummed down. At the British Museum and Kew a mixture of Gum Tragacanth and Gum Arabic (the former dissolved in the latter), in about equal parts, is used for this purpose; but very coriaceous specimens are secured with glue at the last-named establishment, while in the former the stems and ends of branches are usually also secured with straps. When the specimen is entirely gummed down, it is a good plan to keep a few extra flowers or fruits in a small

capsule attached to the sheet; these will be useful if it be required to dissect such portions, and the specimen need not be injured for such purpose.

Poisoning.—Some persons are in the habit of applying a solution of corrosive sublimate for the purpose of washing over their plants when mounted, and so preventing the development of animal life. The solution in use at the Kew Herbarium is composed of one pound of corrosive sublimate, and the same quantity of carbolic acid to four gallons of methylated spirit; this fulfils the purpose for which it is intended very well, but is somewhat disagreeable to use. At the British Museum it is found that the presence of camphor, frequently renewed in each cabinet, is sufficient to prevent the attacks of insects. It will soon be discovered that some plants, such, for example, as the Umbelliferæ and Grossulariaceæ, are peculiarly liable to such attacks; and these orders must be inspected from time to time, so that any insect ravages may at once be checked. Damp is to be avoided in the situation of the herbarium, as it favours the development not only of insects but of mould, and renders the specimens rotten.

The question of labelling is of some importance, especially to those who value neatness and uniformity in the appearance of their herbarium. One or two sets of printed labels for this purpose have been issued, but they cannot be recommended. They give more than is necessary, *e.g.*, the English, or more correctly, the book-English names, the general habitats, and definite localities of rare species, and allow very insufficient space for filling in the date and place of collecting, the name of the collector, and such remarks as occasionally occur. The plan of writing all necessary information upon the sheet itself is a good one. Care should be taken to avoid the possibility of a misplacement of labels; many serious blunders have arisen from the neglect of due precaution in this matter.

Arrangement.—The plants, being now affixed to their respective sheets and duly labelled, are ready to be placed in covers, and rendered available for ready reference. Each genus will require a separate cover, which may well be of somewhat stouter paper than that on which the plants are mounted; the name of the genus should be written at the left-hand corner, followed by a reference to the page of the manual by which the plants are arranged, or to the number which it bears in the "London Catalogue," if that be employed in their arrangement—a purpose for which it is very suitable. Should the species be represented by more than one sheet, it is convenient to inclose each in a cover of thinner paper, which may bear the number assigned to the plant in the right-hand corner; and it is also convenient to write the name of the plant at the bottom of each sheet, and to number it also in the right-hand corner. These details may appear trivial, but they in reality affect in no small degree the readiness with which any species may be referred to. Should the plants be arranged in accordance with the "London Catalogue," a copy should be kept with the herbarium, in which the plants should be ticked off, so that it may serve as a catalogue of the species represented.

Cabinets.—It will of course be necessary to provide some accommodation for our specimens, and for this purpose we shall find no better model than the cabinets in use in the Botanical Department of the British Museum. The measurements can of course be modified so as to suit the size of the herbarium sheets. Each shelf is a separate drawer, which with its contents can be taken out and replaced at will. At Kew the cabinets employed are somewhat similar, but their height is greater and the shelves are fixed. It is possible that I may have omitted to touch upon certain details which may occur to the amateur; should such be the case, I may add that I shall be happy to supply any additional information, either by letter or by word of mouth; or to show the system adopted at the British Museum to any one who may call upon me there for further hints upon this subject.

We have only to add that this little book is beautifully printed—a rare feature in such works. It is a most useful book to all students of natural history.

A "Red Rose" Rental.—I was surprised the other day to find a custom nearly "as old as the hills" not yet died out. In the quit-rent roll of a lord of the manor in one of our South Midland counties, a tenant appears as holding certain lands at a yearly rental of "a red Rose" and suit and service, and at a recent court-leet for the said manor, the tenant attended personally and handed to the steward of the manor a handsome bush or branch containing seven full-blown Roses, in payment of the claim sent in by the steward, viz., one year's rent, one red Rose; arrears six years, six red Roses; total, seven red Roses: for which a formal receipt was duly filled up, signed, and handed to the tenant, who then retired amid the smiles of the jurymen and attendants.—T.G.A.

THE FRUIT GARDEN.

MORE WATER FOR FRUIT TREES.

This is a matter which requires more attention than it generally receives. Figs, Vines, dwarf Peaches, and Plums, and other fruit trees grown in pots and otherwise, all want abundant waterings during their season of growth. My pot Vines, after they are fairly in leaf, are watered every day, though the pots are plunged, and sometimes twice a day in dry weather. Not long ago I finished cutting a heavy crop of excellent fruit from a house of these, and up to the time when the last bunch was cut the water was poured on to the soil through a wide-spouted can in floods. The drainage is ample, and I never allow the surface to become dry. My young pot Vines, struck from eyes in spring, receive the same treatment. Shutting up with a steaming atmosphere is avoided, as a certain cause of warty leaves, but at the root the water is supplied unstintingly. Some of my Figs, large bushes in large pots, which are packed with their roots, receive each five or six gallons daily, and would take more sometimes if I had time to give it to them. They have ripened their first crops of fruit, and are heavily laden with the second, and their ability to carry all through successfully will depend almost wholly on the liberal use of the watering-pot. It is not from want of liquid-manure that many plants appear starved, but from want of water simply and nothing more. The amount of feeding material contained in a pot of good soil is almost or quite sufficient for a plant without any additional stimulant, provided it is diluted judiciously and enough. In the matter of Vine borders, for example, the most important and real lesson which has been learned of late years is that we can hardly over-water them, if they are ordinarily well drained. Aërated and heated borders seem to have come to be regarded, even by their advocates, as needless extravagances, far more dangerous then useful; water in more than sufficient quantity at the roots of the Vines is now recognised as a chief agent in the protection of good Grapes; and results have proved that this recognition is correct. So it is with Peaches and other stone fruits grown under glass. The amount of moisture a large and healthy Peach tree will imbibe in a day is enormous. The tree may be compared to a sheet of moist blotting-paper exposed to the sun; it would dry completely in an hour or so. What, then, must be the amount of evaporation from a Peach tree placed against a warm wall covered with glass? In the case of a hard and well-drained border, and a healthy tree thinly trained and protected with glass, I believe it is hardly possible to over-do the watering during the summer season. It may be asserted that the best results have not yet been attained, even in Peach culture. It has been shown beyond a doubt that the grossest Peach shoots can be perfectly matured in this country with artificial aid, and it has still to be proved what can be accomplished by the extension system of training and liberal feeding and watering such as the Vine has been subjected to. Take the Strawberry again: it does not like being treated like an aquatic, as pot plants sometimes are; but a well-drained Strawberry quarter should be deluged with water throughout the summer season, and also mulched, whether we have regard to present or future crops. A droughty June and July ill suits the Strawberry, and liberal waterings alone, under such circumstances, will nearly double the weight of crop. I have, as a rule, always light crops of Strawberries when I have a light hay crop, and both are due to the same causes—want of sufficient moisture at the root.

Chef.

A Fruit Diet.—A variety of influences are at work to hasten the adoption of a fruit diet. Prominent among these may be reckoned the high price of meat, the low price of corn, and the reported unprofitableness of growing either. Meat, although so dear to consumers, is said not to pay the producers; corn, and especially wheat, is likely to yield less profit, as the foreign trade is now fully developed by improved modes of transit, and extended by increasing demand. Amongst the most profitable crops of the future on field or farm, as well as in gardens, is fruit; the profits of production after the cost is deducted are said to be far larger than for either corn or meat. The last may be doubted, but the profit on fruit-growing per acre has been variously stated at from £20 to even as much as £200. It is certain that it pays well, or the growers could never pay such rents for land as they do in the neighbourhood of London and other large cities. Neither is there the slightest danger of any excessive supply. The taste for fruit as an article of diet has hardly yet been excited in this country; let that once be aroused to any general extent, and there is hardly any limit to the consumption of such a nation as England. Instead of an occasional Apple or Pear now and then as a luxury, which is all that myriads of our population get now, there ought to be no reason—in the nature of the commodity, its

usefulness or price—why the working man of the future should not buy in his Apples, and Pears, and Plums by the peck, bushel, or sack, as he does his Potatoes now. Even on the ground of nutritive matters good fruits rank high, while as a pleasant change and substitution for other foods they would prove most wholesome and satisfying. A fruit diet is quite a different thing from a quantity of fruit eaten before or after a full meal composed of the usual heterogeneous mixture. Nothing is more likely than that fruit so consumed should prove injurious, while used as an article of diet it might be most wholesome. Throughout France, and nearly the whole of Southern Europe, Africa, and Asia, fruit enters largely into the daily food of the people. We do not require—perhaps our climate and temperature might not allow us—to go to such great lengths as this in regard to a fruit diet. One meal a day of fruit would give an immense impetus to fruit cultivation, and, in a proportionate ratio, lower the price of meat, and still further depress the price of corn. By this reflex action on the price of other commodities, fruit cultivation would be still further stimulated and its area extended, for the lower the price of other foods relatively to fruit, the better would fruit culture pay, and as the cost of producing fruit is probably less than that of any other food, profits would bear a much larger proportion to prices than in the manufacture of meat or the growing of corn. The subject is therefore one deserving the serious attention of farmers as well as gardeners, as it is almost certain that the fruit farming of the future will prove a profitable and pleasant branch of agriculture.—D. T. FISH.

Grapes "blind"—a Caution.—Allow me to record a partial failure in Vine culture by way of caution to others. Being strongly impressed with the importance of affording Vines in active growth atmospheric ammonia, I this year kept up a supply of it in all our Vineries by means of litter taken fresh from the stables; this was spread a few inches thick over the floors and borders, and renewed at intervals of a week or ten days, and thoughtlessly the work of renewal was carried on in one of the houses just as the Vines (Lady Downes) were coming into flower. The consequence was that many of the bunches, especially those most directly in contact with the vapour, have failed to set a single berry, but those that were partly or entirely protected by the foliage have set as usual, thus preventing what otherwise might have been a complete failure.—W. H.

Orchards of Pomegranates.—At Narli Kapon (Pomegranate Gate), near the Seven Towers of Stamboul, the railway passes through several Pomegranate orchards, which from the end of July to the beginning of October form a series of pictures which the most enthusiastic lover of colour would gloat over. First, we have the exquisite red blossoms peeping out here and there from amongst the fresh, yellow-green leaves, and looking like sparks of fire, and increasing in number until at last you can scarcely see the leaves for them; then the little round olive-green balls just beginning to form growing larger and ruddier until they almost rival the blossoms in colour. Like the Orange the Pomegranate continues to flower, even after the first fruit has ripened, so that you may have the unopened flower buds and the bursting fruit side by side on the same branch. The Greek and American women are very fond of wearing Pomegranate blossoms on their blue-black hair. The Persian word for Pomegranate—*nar*—also means fire, and *Gulnar*, a favourite Persian name used by Byron, means Pomegranate blossom.—C. W. QUIN.

Vine-leaf Excrescences.—In March last I planted a Vinery with one-year-old canes in a border composed of turf, lime-rubbish, and ½-in. bones. They started well, but soon began to show signs of something being wrong with them. In May I pulled out the worst of them, and re-planted with canes from eyes started in February. Still finding that they did not thrive, I have to-day uprooted the whole, and have forwarded you specimens for inspection; also of a grub and wire-worm, with which the soil is infested. The border has been looked over for wire-worm every morning for some time past, and every one visible has been removed. I also planted another house in May with started vines (one-year-old canes) in a border of the same compost. These are doing well, with the exception of the principal leaves on the stem below the laterals, which scale and drop off in a manner for which I cannot account. Your opinion on the subject will be considered a favour.—G. F., *Tunbridge*. [The damage in this case does not seem to be due to insects. It certainly does not proceed from either of the larvæ of which specimens were sent. The one is the wire-worm, the other (larger and soft-bodied grub) is the larva of the cockchafer in its younger stage. Neither can we find any symptoms of Phylloxera. Not a specimen was to be found, but they desert the plant so soon after it is taken up (except when torpid in winter), that that in itself is no sufficient argument of its having been present. But neither on the roots were there any of the characteristic excrescences caused by it, nor on the leaf were there any remains of it. It is true that on the backs of the leaves below the laterals (to which our correspondent alludes), there is a sort of green scurf, but it is wholly different from the excrescences on the leaves caused by the Phylloxera. Vine-growers are familiar with this growth, and we believe that it is merely a sort of hypertrophy or over-growth caused by over-feeding, too damp an atmosphere, and insufficient ventilation. Such excrescences, however, do little or no harm.—A. M.]

A Neglected Hardy Fruit.—It is only of late years that the Currant has received the attention from fruit growers that its quality and character justly deserve as a table or dessert fruit. A few neglected bushes of the old Red Dutch hid away in the garden, yielded from year to year the scanty supply for making jelly, and occasionally table use. Since the more general introduction of the Cherry, La Versaillaise, and White Grape Currants, the culture and treatment of this fruit have been noticeably improved in every direction. The self-same old Red Dutch, under high culture and annual prunings, yields large crops of superior quality of fruit, in fact, equals, in point of profit, any of the newer and larger sorts. It will be found a saving of time and expense to practise summer pruning with the Currant. A large part of the young shoots may be pulled out of the older bushes early in July while the wood is succulent and soft, and those to remain may be shortened in by pinching with the thumb and finger. A bearing bush should be kept open and spreading; when this surplus young wood is removed in July, the bearing parts are strengthened, and more and larger fruit is produced on the same surface the following year.—P. T. QUIN.

Apples without Blossoms.—Some Apples were sent to us ("American Agriculturist") last fall from Maryland, from a tree which is rather famous in the region thereabout for bearing fruit year after year. We requested the owner to go to the tree at the proper season and gather for us some of the blossoms, being assured that blossoms would be found without petals, and consequently making no show. The blossoms have now been sent to us, and we found them to be green. We had known cases of the sort before, in Massachusetts and elsewhere, and the blossoms were just such as we expected. They have no petals, and so make no show; they have not even a stamen. In place of the petals there are sometimes, but not in all the flowers, some green scales, like calyx-lobes. So the petals have turned to sepals, or else disappeared. In place of stamens there are a dozen or two of pistils; so the stamens have turned into pistils. In the centre there are the ordinary five combined pistils, nearly in their natural state. As the Apples of last year ripened some seeds, though not many, these pistils must have had pollen brought them from neighbouring trees, either by bees or by the wind. The only thing peculiar in the Apples was that they had a two-story or even three-story core. This is explained by the flowers, with their supernumerary pistils. The proper core at the bottom comes from the five regular pistils; the cores above this come from those over them, which should have been stamens, but have by some unaccountable freak changed their sex.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Venns' Black Muscat Grape.—This appears to be a free bearer and also an early Grape. On Vines raised from eyes and planted out at the end of May last year, there are several good bunches which are already colouring: it is a true Muscat, both in habit of growth and appearance of bunch and berry. I trust it may justify the high character which it has received as to flavour. —W. W. H.

Grafting Gooseberries and Currants.—M. Ch. Pohl, an Austrian, has a collection of Gooseberries and Currants, grafted on the stem of our wild Missouri Currant, at the Philadelphia Exhibition. This, according to the "Gardeners' Monthly," is a strong sort, growing 4 ft. or 5 ft. high. [We should like to hear of the advantages of M. Pohl's method, if there be any.]

Strawberry Dr. Hogg.—At the Finchley Horticultural Society's Exhibition which took place the other day, Mr. W. Wakefield, gardener to Mrs. Crawshay, Colney Hatch, showed a dish of this Strawberry, thirteen fruits of which weighed 1 lb., and they were of excellent quality.—S.

Mildew on Grapes.—I have noticed this season that the Vines most affected with Mildew were those nearest doors communicating with the open air, whilst in those houses that were accessible otherwise than from the open air were not affected in the least.—S.

The New "Classification" of Apples.—The great obstacle to any satisfactory classification of fruits is in the fact that the objects themselves are so variable. Through long cultivation fruits are in an unnatural condition, and all their parts are enlarged and exaggerated, and the characters which would be of value in the wild fruit cannot, in these, be regarded as permanent. Every one who has much to do with fruits would heartily welcome any fairly accurate classification, and we regret that the hope excited, when it was announced that Dr. Hogg would publish one, is, in the opinion of the "American Agriculturist," not borne out by an examination of the system itself.

THE INDOOR GARDEN.

COCHLIOSTEMA JACOBIANA.

In this valuable introduction from Ecuador we have not only a plant of distinct and stately appearance, but also one which possesses remarkable beauty. It resembles a Bromeliad with a very short stem. Its leaves grow to a length of from 3 ft. to 4 ft., and they are 7 in. broad at the widest part. They are arranged somewhat closely in a tuft-like form, springing from the short stem, which gives the plant the appearance of a huge Tillandsia. They are spreading, slightly recurved, and of a somewhat pale green colour, their appearance being much enhanced by the beauty of the flowers, which are produced freely from their axils. A strong specimen will continue blooming more or less for three or four months in succession. The flowers may be described as bluish-violet, and are borne upon stout, smooth, pink stalks from 12 in. to 18 in. in length, and as thick as a person's finger. These are furnished with pale pink bracts from 3 in. to 4 in. long by 2 in. in breadth, which, contrasted with the flowers, produce a charming effect, altogether different from anything else. It usually commences blooming in spring, the particular time of course being influenced by the condition of the plant, and the temperature in which it is grown. In addition to its fine appearance, it possesses the good properties of not being difficult to manage, and it can be placed in a conservatory when in bloom during the summer months, without sustaining injury therefrom, when care is taken not to allow it to stand in a draught, or too near where air is admitted; at the same time with this, as with most other stove subjects, under such conditions it does not make much growth, and consequently must not receive too much water, for although it delights in plenty of moisture when in active growth, in a moderately high temperature, when there is little root development going on, a too wet condition of the soil is calculated to endanger its health. For a considerable time after its introduction, its high price, owing to the difficulty with which it is increased, kept many from growing it, but now that it is cheaper it ought to find a place in even the most choice collections. It has an agreeable, but not over-powerful perfume. It may be propagated by means of suckers, which are produced near the base of the plants; these, when sufficiently strong, may be taken off in the spring, stripping off a few of the under-leaves, and placed singly in pots proportionate to their size. In soil consisting of half sand and loam, they will soon root in a temperature of 70° kept moderately, but not too close; when sufficiently rooted, the young plants should be gradually exposed to the full air of the house, giving them plenty of light, but not direct sunshine. They should, however, by no means be shaded too much by other plants, for, if so, they will never make enough roots to support a vigorous head of leaves, without which the plant cannot be seen in its best condition. When the pots are moderately filled with roots, shift into other pots 7 in. or 8 in. in diameter. They will succeed in a mixture of two-thirds good, yellow, turfy loam, and one of fibrous peat, to which a liberal admixture of sand, broken crocks, or charcoal should be added, and a little chopped Sphagnum; drain the pots well; if filled with crocks to one-fifth of their depth it will not be too much, as, in common with other subjects of a kindred nature, they cannot bear stagnant moisture in the soil. The temperature during summer may be kept at 70° at night, giving air when it rises by sun-heat to 80°, and closing in the afternoons whilst the sun is upon the glass, sprinkling water overhead at the same time with the syringe. As autumn advances give more air and less shade, discontinue syringing, and reduce the temperature, keeping it during the winter at about 60° at night, and 5° higher during the day, giving considerably less water to the soil; increase the heat 5° at the beginning of March, and when growth has fairly commenced, shift the plants into pots 4 in. larger than those they now occupy, using soil in a more lumpy state than before. In repotting do not disturb the roots more than can be avoided, merely removing the drainage material from the bottom of the balls. As the weather gets warmer raise the temperature at night to 70°, with a proportionate increase by day, air and shade being attended to as required, and again syringing overhead when the house is closed in the afternoons. Under such conditions the plants will grow apace, and when the roots have got a good hold of the soil, they must be liberally supplied with water. Most probably a few spikes of flowers will make their appearance this season, but these are of secondary importance, as the aim of the cultivator should be to grow the plants to as large a size as possible during the summer; no attempt should therefore be made to move them from the stove when in bloom during the present season. About July they should have another shift, this time putting them in 15-in. or 16-in. pots, with, as before, plenty of drainage, and similar soil; give less water for two or three weeks, until the roots begin to penetrate the new material, after which treat them in every way as in the early part of the summer. As autumn advances again reduce the temperature, and dispense, as before, with the use of the syringe and shading; also maintain a drier condition of the atmosphere, wintering them as has been previously done. In spring again increase the temperature, and give additional water, with shade, as required. If all have gone well, and the plants have made the progress which they ought to have done, they will begin to push up their flower-spikes about the beginning of May, producing from a dozen to a dozen and a half at or near the same time. It will be better not to move them to cooler quarters until Midsummer, as whilst the spring growth is somewhat tender, and the nights cold, they would be liable to suffer in a way of which there will be no danger later on in the season; the successional flowers which they will produce will render them an acceptable addition to the conservatory, where they may remain up to the end of August, placing them again in the stove before the weather gets cool. Winter them as hitherto; and in the spring, before growth has commenced, turn them out of their pots, and work away as much of the soil from the upper portion of the ball as can be done without injuring the roots to any extent; regulate the drainage, and add new soil, putting the plants back into the same pots out of which they were turned, unless there is a desire to grow them on to a very large size, in which case they may be shifted into a pot 2 in. larger. Treat them during the summer as in the preceding one; but this season give them a little weak, clear manure-water once a week; this will compensate for the less addi-

Plant of Cochliostema in flower.

tional root-room which they have received. Their autumn and winter management should be the same as before, in spring removing some of the old soil, and putting fresh material in its place, again assisting them with manure-water. When suckers are made they should, as they get large enough, be removed and struck as already recommended; these will take the place of the older plants when they get shabby in appearance. The character of the leaves of these plants and the continuous use of the syringe during the growing season keep down as a rule the smaller kinds of insects that affect the occupants of the stove; but, if scale make its appearance upon them, it is easily removed by sponging, and mealy bug can be washed off by syringing with tepid water. Of the general appearance of the plant some idea may be formed from the annexed illustration. T. BAINES.

WATERING PLANTS IN POTS.

WATERING, I need scarcely say, constitutes a very important part of plant culture. As a general rule, all stove and greenhouse plants of free growth want a constant and steady supply of moisture at the roots during the growing season. The soil should neither be soured nor rendered sodden through repeated waterings that are not required, nor through defective drainage—a fertile source of mischief in this respect—nor should it ever be even moderately dry. This, however, is just the difficulty. A plant should never be allowed to suffer in the least from want of water, for it means starvation and worse; and yet it should not be over-watered. The beneficial effects of plunging plants in pots in soil, ashes, Cocoa-nut fibre, &c., are wholly the result of an equable degree of moisture and temperature at the roots; in watering, therefore, these conditions must be imitated as far as possible. The first essential is to drain the pot well, and the next is to leave room on the surface for it to hold water sufficient to soak the ball thoroughly. The practice of filling the pots too full of soil in potting cannot be too severely condemned, and yet it is all but universal. The consequence is that, when the plants have to be watered, nothing like the necessary quantity can be given them at once, and there is all the trouble of going over them again, perhaps two or three times, until each is thoroughly soaked. But what follows if the plants have only been served with a dribblet each? By midday they are probably flagging, and if they happen to be noticed, a quantity of water is fetched from the nearest tank and dashed in among them immediately, as a temporary supply; and thus the practice goes on, entailing the most disastrous results. The time to water is early in the morning, or in the evening when the heat of the day is over, and always when the ventilation is reduced to its minimum. Water should never be given when evaporation is going on rapidly, particularly in greenhouses and conservatories, where the plants are usually placed on dry, airy shelves and stages, and exposed to draught on all sides. Some plants are more impatient of neglect in watering than others. Among these is the Heath, which, always being potted in peat well rammed into the pot, requires considerable attention in this respect. Heaths should always be watered before they get dry. Plants that have been shifted on from one sized pot to another are very apt to get dry in the centre of the ball; and when this occurs no amount of watering will soak it—the water simply runs past it, and in the end the plant gets sickly and dies. At one time, when I had a large collection of Cape Heaths under my charge, I found that parched balls was an evil constantly to be guarded against. Pushing a small stake down the centre of the ball usually revealed the state of affairs; and if the ball were found to be dry, steeping it in a tub of water for a day or more, or until the bubbles of air ceased to rise to the surface, was the best remedy. The stake test is not to be recommended, however, unless drought is suspected, for it injures the roots in its passage through the soil. The Camellia is another subject often ruined through careless watering. Planted out, it grows like a Laurel bush; but in pots or tubs unhealthy, scraggy specimens, that drop their buds just before they should expand, are too common. The Camellia is an uncommonly close and abundant rooter; the roots permeate the soil thickly in every direction, the ball near the stem being generally a complete mass of fibres, which drink up an inconceivable quantity of water; and if this be not supplied regularly, the soil gets dust-dry, and then, as with the Heath, steeping is the only alternative. Years ago, I had occasion to re-tub a large number of Camellias. They had been top-dressed frequently, but had not been shifted for a number of years, and many of the larger plants were in an unsatisfactory condition, not having made such growth annually as might have been expected. The shifting explained matters, however, for nearly all were dry in the centre of the balls. It was suspected that the plants had suffered a year or two before from too little watering, and copious supplies had been given them at intervals since that time, but, as it now appeared, without effect. After removing the outer soil and top-dressings, which did not contain many roots, the balls were found to be dry, matted, and so hard that it required a good dig with a stout Oak peg to make any impression on them. They were all steeped for four-and-twenty hours in the water-tanks, and afterwards repotted, many of them going into less tubs or pots than those from which they were shifted. Plenty of room was left for water, and a kind of basin was formed round the necks of the plants, to insure its passage through the ball, instead of down between the sides of the pot and the soil—a channel through which the water too frequently finds its way in pot-bound plants. Even in the case of Camellias planted out in a bed after having been grown in pots for a time, it is advisable to guard against the balls becoming dry. I have seen plants lifted which were just as bad in this respect as if they had been in a pot. When they are planted out young, and the roots are allowed to extend freely, there is little or no danger. Among other susceptible subjects in the matter of watering are Cinerarias and Calceolarias; neither can bear drought at the root without injury. They will either go back, and perhaps go off altogether, or they will be attacked by aphides, and there are no plants so difficult to fumigate effectively as those just named—in fact, I never care to subject them to Tobacco-smoke if it can be avoided. Both enjoy light and sunshine, but a cool bottom of flag or sand they must have; also good drainage and copious waterings. Under these conditions they are rarely troubled with insects, and the plants grow freely. Among stove plants, Ferns are perhaps the most sensitive. They like, and must have, a steady supply of water at the roots, and they enjoy a position above a water-tank where the evaporation is constant, but they do not like immersing in the water, even to the extent of an inch in the pot. In an aquatic house this was tried with Ferns and Caladiums, but neither throve so well as judiciously-watered plants grown in the shade. C.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Ixora regina.—A fine specimen of this new variety of Ixora has recently been heavily laden with rich, salmon-coloured flowers in Mr. Bull's nursery at Chelsea. It resembles the well-known I. coccinea, but bears larger trusses of flowers and is more bushy and compact than either I. Williamsi or I. coccinea. It is evidently an abundant bloomer.—S.

Pratia repens (Lobelia ilicifolia).—This is now covered with its pretty little white flowers. It has stood all the winter in a pot placed in a pan of water on a shelf of a cool greenhouse much exposed to the sun. Another plant, which has stood all the winter in a cool frame, looks almost as healthy, but of course will not flower till later.—H. H. CREWE, *Drayton-Beauchamp Rectory, Tring.*

Prenanthes (Sonchus) elegantissima.—This useful addition to slender-growing decorative plants recently introduced by Messrs. E. G. Henderson, and of which you have given an illustration (see p. 579, vol. viii.), is well worth attention. It has a gracefully-drooping pyramidal habit, reminding one of a fine green spray of Asparagus. When better known, it will doubtless be highly appreciated for dinner-table decoration:—S.

Miniature Pot Roses.—At the Richmond Flower Show, which took place on the 29th ult., Messrs. Veitch & Sons staged an interesting collection of small Roses in pots, consisting of about 100 plants, each bearing from three to six fully expanded blooms. These were placed in a semi-circular form upon the Grass, backed up by fine-foliaged plants, and edged with boxes of cut flowers, the effect of which arrangement was most pleasing and one which elicited the warmest admiration from the visitors.—D.

The Prairie Rose.—This Rose is very highly spoken of as a stock for Roses in American papers. I should be glad if some American reader of THE GARDEN would tell us about the Prairie Rose, its character, name, &c.

THE KITCHEN GARDEN.

KITCHEN GARDEN WALKS AND EDGINGS.

In some recent remarks which I made on this subject I laid some stress on the necessity of keeping both walks and edgings in kitchen gardens in perfect order, and this has called forth strong expressions of disapproval from the editors of both The Garden and "The Gardener." I maintain, however, that the labour needed for such work is well bestowed, not only as regards improved appearance, but also as respects the facility with which the various operations connected with cultivation can be carried on in all weathers, owing to the ready means of access which good walks afford. I do not consider the ordinary routine of field cultivation, as practised in most large establishments, "in addition to that carried on in the kitchen garden," any improvement on garden culture strictly so called, or likely to lead to the end which I advocated, viz., the rendering of kitchen gardening more popular with young gardeners. "The Gardener" (see p. 29), not only condemns walks and edgings as useless appendages to a kitchen garden, but overstates the case by laying one-half of the debtor account to their charge. But how stands this matter in places where there is no surplus labour to bestow on unnecessary work, and where a pretty correct debtor and creditor account of everything has to be kept? Every one is aware that ornamental gardening and filling houses, pits, and borders, with bedding plants, to the exclusion of the attention that ought to be paid to fruits and vegetables, are far heavier on the creditor account than the keeping of walks and edgings in proper order. If a strict debtor and creditor account of the labour expended on fruits and vegetables alone were possible, I would guarantee a considerable balance on the creditor side; but to expect a garden to be remunerative when three-fourths of the labour are expended on ornamental gardening, is simply absurd. The kitchen garden, as all of us know, yields in importance to no branch of the gardener's art, and to reduce it to the level of a Potato plot or Cabbage field, would be an event to be deplored, as it ranks low enough now in the estimation of young gardeners. Keeping its borders gay with flowers is unnecessary; on the contrary, its legitimate occupants should at all seasons render it sufficiently attractive for both the owner and his friends to find a pleasure in inspecting it. As regards alleys between the crops as a substitute for walks, most gardeners who have passed a winter in nursery grounds will be able to form a correct notion as to which is preferable or most profitable, and although, as "The Gardener" states, a good many will come to the conclusion that walks and edgings are unnecessary, I question whether there are not a much greater number who would gladly convert their alleys into good walks if the labour at their command enabled them to do so; as a really good walk, once properly made, can be kept in good condition with a minimum of labour, compared with mere tracks, which are neither satisfactory to the owners, nor creditable to those in charge of them.

James Groom.

Henham.

DARWIN ON THE ORIGIN OF THE PEA.

(PISUM SATIVUM).

Most botanists look at the garden Pea as specifically distinct from the field Pea (P. arvense). The latter exists in a wild state in Southern Europe; but the aboriginal parent of the garden Pea has been found by one collector alone, as he states, in the Crimea. Andrew Knight crossed, as I am informed by the Rev. A. Fitch, the field Pea with a well-known garden variety, the Prussian Pea, and the cross seems to have been perfectly fertile. Dr. Alefeld has recently studied the genus with care, and, after having cultivated about fifty varieties, concludes that certainly they all belong to the same species. It is an interesting fact already alluded to, that, according to O. Heer, the Peas found in the lake-habitations of Switzerland of the Stone and Bronze ages, belong to an extinct variety, with exceedingly small seeds, allied to P. arvense or the field Pea. The varieties of the common garden Pea are numerous, and differ considerably from one another. For comparison, I planted at the same time forty-one English and French varieties. They differed greatly in height—namely from between 6 in. and 12 in. to 8 ft.—in manner of growth, and in period of maturity. Some differ in general aspect even while only 2 in. or 3 in. in height. The stems of the Prussian Pea are much branched. The tall kinds have larger leaves than the dwarf kinds, but not in strict proportion to their height:—Hair's Dwarf Monmouth has very large leaves, and the Pois Nain Hatif and the moderately-tall Blue Prussian have leaves about two-thirds of the size of the smallest kind. In the Danecroft the leaflets are rather small and a little pointed; in the Queen of Dwarfs, rather rounded; and in the Queen of England, broad and large. In these three Peas the slight differences in the shape of the leaves are accompanied by slight differences in colour. In the Pois Géant sans Parchemin, which bears purple flowers, the leaflets in the young plant are edged with red, and in all the Peas with purple flowers the stipules are marked with red. In the different varieties, one, two, or several flowers in a small cluster are borne on the same peduncle; and this is a difference which is considered of specific value in some of the leguminosæ. In all the varieties the flowers closely resemble each other, except in colour and size. They are generally white, sometimes purple, but the colour is inconstant even in the same variety. In Warner's Emperor, which is a tall kind, the flowers are nearly double the size of the Pois Nain Hatif; but Hair's Dwarf Monmouth has large leaves, likewise large flowers. The calyx in the Victoria Marrow is large, and in Bishop's Long Pod the sepals are rather narrow. In no other kind is there any difference in the flower.

The pods and seeds, which with natural species afford such constant characters, differ greatly in the cultivated varieties of the Pea; and these are the valuable and consequently selected parts. Sugar-peas, or Pois sans Parchemin, are remarkable for their thin pods, which, whilst young, are cooked and eaten whole; and in this group, which, according to Mr. Gordon, includes eleven sub-varieties, it is the pod which differs most; thus Lewis's Negro-podded Pea has a straight, broad, smooth, and dark-purple pod, with the husk not so thin as in the other kinds; the pod of another variety is extremely bowed; that of the Pois Géant is much pointed at the extremity; and in the variety "A Grands Cosses," the Peas are seen through the husk in so conspicuous a manner that the pod, especially when dry, can hardly at first be recognised as that of a Pea. In the ordinary varieties the pods also differ much in size; in colour that of Woodford's Green Marrow being bright green when dry, instead of pale brown, and that of the Purple-podded Pea being expressed by its name; in smoothness, that of Danecroft being remarkable glossy, whereas that of the Ne Plus Ultra is rugged, in being either nearly cylindrical or broad and flat; in being pointed at the end, as in Thurston's Reliance, or much truncated, as in the American Dwarf. In the Auvergne Pea the whole end of the Pea is bowed upwards. In the Queen of the Dwarfs and in Scimitar Peas, the pod is almost elliptic in shape.

In the Pea itself we have every tint between almost pure white, brown, yellow, and intense green; in the varieties of the sugar Peas we have these same tints, together with red passing through fine purple into a dark chocolate tint. These colours are either uniform or distributed in dots, striæ, or Moss-like marks; they depend in some cases on the colour of the cotyledons seen through the skin, and in other cases on the outer coats of the Pea itself. In the different varieties the pods contain, according to Mr. Gordon, from eleven or twelve to only four or five Peas. The largest Peas are nearly twice as much in diameter as the smallest; and the latter are not always borne by the most dwarfed kinds. Peas differ much in shape, being smooth and spherical, smooth and oblong, nearly oval in the Queen of the Dwarfs, and nearly cubical and crumpled in many of the larger kinds. With respect to the value of the differences between the chief varieties, it cannot be doubted that, if one of the tall Sugar-peas, with purple flowers, thin-skinned pods of an extraordinary shape, including large, dark purple Peas, grew wild by the side of the lowly Queen of the Dwarfs, with white flowers, greyish-green, rounded leaves, scimitar-like pods, containing oblong, smooth, pale-coloured Peas, which become mature at a different season; or by the side of one of the gigantic sorts, like the Champion of England, with leaves of great size, pointed pods, and large, green, crumpled, almost cubical Peas—all three kinds would be ranked as distinct species. Andrew Knight has observed that the varieties of Peas keep very true, because they are not crossed by insects. As far as the fact of keeping true is concerned, I hear from Mr. Masters, of Canterbury, well known as the originator of several new kinds, that certain varieties have remained constant for a considerable time; for instance, Knight's Blue Dwarf, which came out about the year 1820. But the greatest number of varieties have a singularly short existence; thus Loudon remarks that "sorts which were highly approved in 1821, are now (in 1833) nowhere to be found;" and on comparing the lists of 1833 with those of 1855, I find that nearly all the varieties have changed. Mr. Masters informs me that the nature of the soil

causes some varieties to lose their character. As with other plants, certain varieties can be propagated truly, whilst others show a determined tendency to vary; thus two Peas differing in shape, one round and the other wrinkled, were found by Mr. Masters within the same pod, but the plants raised from the wrinkled kind always evinced a strong tendency to produce round Peas. Mr. Masters also raised from a plant of another variety four distinct sub-varieties, which bore blue and round, white and round, blue and wrinkled, and white and wrinkled Peas; and although he sowed these four varieties separately during several successive years, each kind always reproduced all four kinds mixed together.

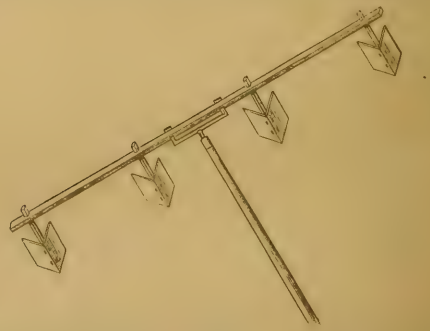
With respect to the varieties not naturally intercrossing, I have ascertained that the Pea, which in this respect differs from some other Leguminosæ, is perfectly fertile without the aid of insects. Yet I have seen humble-bees whilst sucking the nectar depress the keel-petals, and become so thickly dusted with pollen that it could hardly fail to be left on the stigma of the next flower which was visited. Nevertheless, distinct varieties growing closely together rarely cross; and I have reason to believe that this is due to their stigmas being prematurely fertilised in this country by pollen from the same flower. The horticulturists who raise seed-Peas are thus enabled to plant distinct varieties close together without any bad consequences, and it is certain, as I have myself found, that true seed may be saved during at least several generations under these circumstances. Mr. Fitch raised, as he informs me, one variety for twenty years, and it always came true, though grown close to other varieties. From the analogy of Kidney Beans I should have expected that varieties thus circumstanced would have occasionally crossed. Whether many of the new varieties which incessantly appear are due to such occasional and accidental crosses I do not know. Nor do I know whether the short existence of almost all the numerous varieties is the result of mere change of fashion, or of their having a weak constitution from being the product of long-continued self-fertilisation. It may, however, be noticed that several of Andrew Knight's varieties, which have endured longer than most kinds, were raised towards the close of the last century by artificial crosses; some of them, I believe, were still vigorous in 1860; but now, in 1865, a writer, speaking of Knight's four kinds of Marrows, says they have acquired a famous history, but their glory has departed.—"Animals and Plants under Domestication."

New Potatoes in Winter.—M. Tourniol, President of the Horticultural Society of Limoges, has published his experience of M. Telliez's system of growing New Potatoes in winter. M. Tourniol, who appears to have been instructed by M. Telliez himself, procured a number of Potatoes of the Margottin variety in the month of April 1875. Having picked out those which appeared most suitable for seed, he laid them on boards in a garret. Towards the end of August he planted them in a bed which had just been occupied by a crop of salad. The eyes had pushed then more than an inch long and a quarter of an inch in diameter. When M. Tourniol told his gardener to come with him and plant Potatoes, he looked amazed, and it was with some difficulty that his employer succeeded in getting him to comply with his request. Some time after this M. Tourniol was obliged to be absent for a couple of months, and while he was away the young plants had been somewhat neglected. They were, however, sufficiently vigorous, although choked up with weeds. He had the ground well weeded, and told his gardener to lay straw round them; but he neglected to do so. M. Tourniol was again obliged to absent himself until the beginning of November, and on his return he found that the snails and the frost had made an end of his Potato plants, everything having withered down to the ground. In no way discouraged, M. Tourniol commenced turning up the apparently barren ground, and, spite of its having been greatly neglected, found beneath it a fair crop of Potatoes varying in size from that of a Walnut to that of a hen's egg. This year M. Tourniol intended beginning his planting about June 1, and at fortnightly intervals until the end of September. Following M. Telliez's advice, M. Tourniol cut off a number of eyes, leaving a portion of the tubers attached, and tried to preserve them by immersing them in dry wood ashes contained in a well-stoppered bottle, but the experiment did not succeed.

Early French Navets and Carrots.—We are indebted to Mr. Eugene Ramey, of Paris, for the following interesting information respecting these useful vegetables. The long white Turnip, of which such large quantities are now being brought from Paris to the London market, is the Long Early White Navet des Vertus or Jersey Turnip. The only district about Paris that will grow this very early Turnip is the valley on the banks of the Seine, opposite le Pecq de St. Germain and Marly, between Le Vesmet Chatou and the river. The principal villages where the cultivation of this Turnip is carried on are Croissy and Montesson, especially the former, hence this Turnip is known in the Paris market as the Navet de Croissy. It is almost impossible to grow good early Turnips in the spring and summer on a large scale in the open ground; either they do not form well or else they flower without forming at all—that is to say, when they escape the ravages of the grub or beetle. In the Croissy district the soil is sandy, the climate somewhat cold, and the air saturated with moisture, conditions all of which are favourable to the cultivation of this Turnip, which elsewhere can only be grown from seed sown in July and August. The Croissy cultivators also produce large quantities of the early round Parsnip and half long early round scarlet Carrot, of both of which varieties enormous quantities are now being sold in the Halles and other Paris markets. As for the little Round Carrot, which we also receive in large quantities from the same source, it is known to the French market gardeners as the Early Very Short Scarlet Carrot, also as the Carrotte Grelot or Bell Carrot. It is not grown on a large scale, and it is only the market gardeners round Paris who grow it in hot or cold beds, but always in small quantities, so that the exporter has to purchase it in lots of from 12 to 100 bundles from a large number of sellers, whilst of the Jersey Turnip thousands of bunches may be bought every morning from two or three growers. The Turnips and Carrots at present on sale were sown in March and April. The market gardeners of the plain of Génévilliers, near Asnières, on the west of Paris, which is watered by the sewage of the capital, are trying to grow those varieties of Turnips and Carrots, but, as has just been stated, it is especially near the village of Croissy, that the Navet des Vertus is grown, whilst the little Round Carrot is grown on a small scale all round Paris.

A USEFUL DRILL RAKE.

Mr. J. Farmer, 19, Wellesley Road, Torquay, has sent us a sketch of a drill rake, of which the annexed is a representation. He has found it



useful for drawing drills for Carrots, Onions, and other small seeds, inasmuch as by means of it four drills can be drawn at once. The old plan still practised in many gardens is to form drills with a hoe, but much time and labour are thereby lost. A glance at our engraving will indicate at once the construction of this implement, which is an improvement on any similar garden drill drawer we have yet seen, and as it can be made by any carpenter in a short time, it is well worth attention. Two or three might be made of different sizes, in order to form drills, say 6 in., 9 in., 12 in., and 15 in. apart, or the tines, which are of sheet-iron, might be made to slide on the cross-piece, or holes might be bored in it 3 in. apart, so that the pegs or tines could be set at different distances as desired. B.

Tomatoes for Succession.—Plants of these that have ripened their crops in pots, and that are clean and healthy, if slightly cut back and placed in large pots, will yield a good crop later in the season, which will be found useful where a long supply is needed. After potting place them in a sunny spot and give them abundance of water at the roots, taking them indoors in autumn to ripen their fruit.—S.

Earth Burning as a Weed Destroyer.—Where land, especially heavy land, is full of Couch Grass and seeds of weeds, burning is a certain cure. The inorganic portions of the seeds or weeds are not destroyed by fire, but they are thus rendered available for the growth of useful crops. It seems to me to have been a marvellous mistake to fallow the land for two years, and cart away 200 loads per acre of Couch Grass, as was done on the Hall Farm, near Sevenoaks. During the summer months the soil and its contents might have been charred at small cost, and an enormous saving effected. The charred remains of the weeds and their seeds would have manured the land for a succession of useful crops. The earth burning effectually destroys all seeds.—J. J. Mechi.

FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

IN a very few weeks the Royal Horticultural Society will have to be reconstituted; those who have the charge of this work might, I think, take some hints from the Volunteer Rifle Association, which goes on and prospers. The higher and richer classes naturally take the lead, but the association and rifle corps movement embrace all classes, the qualification being the taking an interest in the object. The subscription is one guinea. I believe that if those interested in horticulture and in the improvement of flowers, fruits, and vegetables would now all pull together, would join the amended society themselves, and canvass their friends in their districts, we should soon have a strong representative society. The leading nurserymen have influence; if they will send out with their catalogues and invoices and back up a short statement, showing how much good work the society does at its committee meetings, and by its experiments at Chiswick, and pointing out that its work is essentially distinct from that of all local societies, however influential, and ending with a strong appeal to all lovers of their gardens to lend a helping hand at once, and if the powerful gardening press will circulate slips with their papers, I believe that such a list of suitable Fellows would come in as would very soon put the Society firmly on its legs. It would, of course, be necessary to prove that the liability of Fellows is absolutely limited to the amount of their guinea subscription. As in the case of the Rifle Association we should be associated with the local societies, and might, perhaps, have one great annual field-day, to which representatives would come from all parts of the country.

Heatherbank, Weybridge. GEORGE F. WILSON.

Mr. Grieve on Hybrids.—It is stated (see p. 37) that when a hybrid is made to unite with one of its parent forms, or with another parent form, or with a hybrid of different origin, the product is termed a "derivation hybrid." I am induced to ask if any one of your readers can kindly point out to me an instance of this circumstance having taken place. As far as my experience goes, I have always found it to be impossible to induce a hybrid to form a union with any other plant, sterility appearing to be the unvarying accompaniment of hybridity. The terms "hybrid" and "cross" would appear to be very frequently considered as synonymous, and applied indiscriminately. This should certainly not be done. Hybrid should never be applied to productions originating between different varieties of the same species, which are generally, if not always, fertile, while those originating between different species of the same genus, as well as those of more rare occurrence between different genera, are, I believe, invariably sterile. Should instances, however, be known where such is not the case, particulars regarding them would doubtless be interesting to many.—P. GRIEVE, *Culford Hall, Bury St. Edmunds.*

Nymphæa flava (Leitner).—The plate of Audubon's great work which represents the American Swan likewise represents the flower of a yellow Nymphæa, or true Water Lily, under the above name. The foliage which accompanies it may be that of a Nuphar, but the flower is that of a Nymphæa. Leitner was a German botanist who explored Southern Florida, and died or disappeared there—if we rightly remember, was thought to have been killed by Indians. He doubtless met Audubon, and gave him the name which he published on his plate. The species has properly been left unnoticed so long as the whole evidence of its existence rested upon Audubon's figure of a flower, accompanied as it is with Nuphar foliage. But of late years we have heard of a yellow Water Lily in Florida. In 1874 Dr. Edward Palmer sent us a specimen with foliage and flowers collected in the Indian River, and certified to the yellow colour. It has now been detected by Mrs. Treat, on the St. John's River, and living plants of it communicated to us, from which we may expect to see fresh blossoms. The growth is very different from that of N. odorata, the rhizome being shorter and thickly beset with salient, blunt tubercles, and the plant propagates freely by means of stolons. —A. GRAY, in "Silliman's Journal."

Keeping down the Weeds.—The only remedy for weeds is prompt destruction in a young state. Weeds are easily eradicated if never allowed to advance beyond the seed-leaf. Once let their roots run deep and wide, and their tops rise high, and then the weeds are masters in the garden. It provokes one to see the complacency with which some cultivators allow weeds to establish themselves in flower beds or borders, or on roads or walks, and their subsequent futile efforts to subjugate them. Prompt destruction will ultimately vanquish the very worst of them. Plantains, Grass, Thistles, and Docks, are perhaps the most difficult to eradicate. But if by any neglect these have gained a strong footing in any garden, constant beheading alone will destroy them. No plant can live long if never allowed to form leaves or stems, and the shortest, surest, easiest way to eradicate the worst weeds is by incessant cutting off all their visible parts.—D. T. FISH.

SOCIETIES AND EXHIBITIONS.

ALEXANDRA PARK ROSE SHOW.

JULY 7TH AND 8TH.

AFTER the brilliant shows of Roses so recently held at the Crystal Palace and Royal Aquarium, we did not expect to meet with such a charming display as that which graced the concert room of the Alexandra Palace last Friday and Saturday; indeed, taken as a whole, this was one of the very best Rose shows of the season, and being held in a cool, spacious, and well-ventilated room, free from direct sunlight, it was one of the most enjoyable, the blooms keeping unusually fresh and beautiful. One of the most interesting features of the exhibition was the class devoted to English raised Roses, a feature which we hope to see followed not only here but elsewhere. It has now been indisputably demonstrated that first-class Roses can be raised in our climate from English ripened seed, and the results obtained by Messrs. Paul, Mr. Turner, Mr. Laxton, and others, are such that we can henceforth afford to show English-raised Roses in a class by themselves, since their beauty is fully equal to that of the best French-raised kinds. Pot Roses were shown on this occasion in splendid condition by Messrs. Paul and Son, of Cheshunt, and the principal prize takers in the larger classes were Messrs. Paul and Son, Mr. R. B. Cant, Mr. C. Turner, Messrs. Cranston and Mayo, Mr. J. Keynes, and Mr. G. Prince. The principal prizes in the amateurs' classes were awarded to Mr. W. Nicoll, Drinkstone Park, Mr. Rushmore, Mr. Ingle, Mr. Atkinson, and Mr. Smallbones. As the varieties shown were in the majority of cases similar to those mentioned in our reports last week, it is unnecessary to re-describe them.

New Roses.—The first prize for twelve new Roses of 1874, 1875, and 1876 was awarded to Mr. Turner's stand, which contained the following varieties:—Isaac Wilkinson, deep purple; Miss Hassard, full rosy-salmon; Sir Garnet Wolseley, crimson; Villaret de Joyeuse, rosy-crimson; Beauty of Slough, crimson-purple; Rev. J. B. Camm, Alex. McKenzie, purple; Hippolyte Jamin, Sir Salar Jung, very dark purple; Jean Ducher, yellow Tea: J. S. Mill and Royal Standard. Messrs. Paul & Son, who were second in this class, had the Shah, crimson; Perle des Jardins, sulphur Tea; Hippolyte Jamin, Sir Garnet Wolseley, Comtesse de Sureyne, delicate salmon-peach; Mr. G. Y. Teas, crimson-purple; and others already named. Among the newer varieties we noticed six excellent blooms of Hippolyte Jamin from Mr. Carp, of Oxford, to whom a first prize was awarded; Messrs. Cranston & Mayo being second with the crimson-purple Sir Garnet Wolseley; and Mr. G. Prince, of Oxford, third, with the rosy-salmon Madlle. M. Cointet. Mr. Turner had good blooms of Rev. J. B. Camm, one of the most deliciously scented of all Roses; and Royal Standard, a rosy-lilac, globular variety.

English-raised Roses.—Of these Messrs. Paul & Son, who were first, showed the following, viz.:—St. George, crimson; Bessie Johnson, blush; Cheshunt Hybrid, carmine; Queen Victoria, blush-white; Duke of Edinburgh, crimson-purple; Peach Blossom, rosy-peach; John Hopper, lilac-carmine; Empress of India, crimson; Devoniensis, creamy-white; Lord Macaulay, crimson; Princess Beatrice, a full, rosy-lilac; Beauty of Waltham, carmine; Black Prince, rich crimson-purple; Princess Mary of Cambridge, delicate rosy-salmon; Dr. Hooker, crimson; Duchess of Edinburgh, peach; Reynolds Hole, dark crimson; and Annie Laxton. Mr. Turner was second in this class with very good blooms, among which we noted Mrs. Baker, crimson-lilac; Royal Standard, in the way of Princess Beatrice, but of a more decided lilac tint; Sir Garnet Wolseley, crimson; Star of Waltham, bright carmine; John Stuart Mill, crimson; Miss Poole, rosy-peach; Miss Hassard, rosy-salmon; and Rev. J. B. Camm, bright rosy-carmine. Mr. Cant had St. George, a good crimson kind; Lord Clyde, purplish-crimson; climbing Victor Verdier, carmine; and others, the names of which have already been given.

Tea-scented Varieties.—Among these the best in the nurserymen's class came from Mr. G. Prince, of Oxford; Messrs. Paul & Sons being second. Among the different varieties we noted Homère, sulphur tipped with pink; Niphetos, Devoniensis, Madame Margottin, sulphur; Madame Berard, sulphur, salmon centre; Alba rosea, Marie Van Houtte, sulphur, suffused with rosy-lilac; Belle fleur d'Angoa, flesh; Amazon, sulphur; Comtesse Nadillac, creamy-yellow and rose; Marie Arnaud, sulphur white, in the way of Niphetos; Triomphe de Luxembourg, creamy-white and pink; Caroline Kuster, sulphur; Jean Ducher, orange-yellow; Madame Sertot, white, with a blush centre; and others. In the amateurs' class Mr. W. Ingle had the best twelve Teas; the Rev. J. B. Camm being second. Among the more beautiful varieties in these collections we noted Adam, creamy-lilac; Moire, creamy-yellow; Niphetos, ivory-white; Catherine Mermet, creamy-flesh; Maréchal Niel, yellow; Souvenir d'un Ami, blush; Madame Bravy, white; Devoniensis, Gloire de Dijon; Souvenir de Paul Neron, lemon-yellow; Cheshunt Hybrid, carmine; and others.

What is a Vase?—Exhibitors' Troubles.—The recent awards of prizes at the Aquarium and Royal Botanic Society's Shows have not given satisfaction, and it would be well if some standard rules could be framed for the guidance of judges. The schedules, too, should also be more explicit. The judges at the Aquarium disqualified several pretty épergnes because they were not vases. Turning to Johnson we find vase described as a vessel generally for ornament; would not this apply to an épergne, or did the judges expect a garden ornament, and in

revenge award the first prize to a flower-pot, as coming nearer their views of a vase. As regards table decorations they disqualified a table (though they highly commended it) because the decorations employed would, they thought, be more appropriate for a larger table; but they overlooked the fact that the schedule specified a table completely laid in every particular for fourteen persons; and, at the same time, a space scarcely large enough for ten at most was allotted. Why, therefore, disqualify when sufficient space for the number required is not provided for? At the Botanic Gardens a table was shown which proved so attractive that visitors clustered round it in crowds, and it was purchased by a visitor as it stood. This was disqualified on the same ground as those just stated, although prizes were awarded to tables, or rather decorations, which, if on a table fully equipped, would have been even more crowded than the fully appointed and disqualified one in question. Another cause of complaint is withholding prizes because there is but one entry; is this fair? would it not be reasonable to expect the secretary, who knows at least three days beforehand to inform the intending exhibitor of the fact, and save him the trouble of showing? To say the least about it, this kind of treatment is not calculated to stimulate the trade to give exhibitions their support, in order to keep societies in funds.—DICK RADCLYFFE & Co., High Holborn.

A CHILDREN'S FLOWER SHOW.

IN the gardens of Grosvenor House, on Monday afternoon, a "Children's Flower Show" was held, under the kindly superintendence of the Duke of Westminster, and the youthful competitors received their prizes from the hands of the Duchess herself. At four o'clock the show opened, and the flowers had then been arranged under a large tent erected to the right of the lawn, all the judging being then over and the prize-winners declared. From four o'clock till six o'clock the visitors enjoyed the cool of the ample lawn, and listened to a well-played selection of music by the band of the Duke's Own (Westminster) Rifles. At six o'clock the Duchess of Westminster distributed the prizes, all of money, with an injunction (not unheeded, it might have been thought, considering the diminutive size of some of the small competitors) to be sure and "not lose it." Between thirty and forty children, the eldest apparently not more than fifteen years, received prizes, and when that part of the ceremony was over, the Earl of Shaftesbury addressed the visitors, remarking that they saw him in a position which he had never occupied before, and, he firmly believed, he should never occupy again—*i.e.*, that of leader to Mr. Gladstone. Mr. Gladstone would address them, and the Earl of Shaftesbury was anxious that the proposal he had to make should have from Mr. Gladstone; but the right hon. gentleman had been good enough to say that he would follow his leadership. He hoped the visitors had seen that day sufficient to show them that they should encourage in children a taste for flowers. He had seen himself in the east and central parts of London, where children were surrounded by every bad influence of moral degradation, dirt, and squalor, the refining influence of flowers on the might, the mind, and the heart that had followed on encouragement. He hoped that those who had witnessed the result of that day would do their best to encourage flower-gardening among the poor. It was his experience that it taught the children of the poor the best of lessons, for they watched the flower from seed to blossom, and learnt the beneficence of a great and unseen Power. It taught them the great truth uttered by Bacon in one of his essays, "God Himself planted the first garden," and he added that "a garden was one of God's blessings." The rich had it in their power to benefit in mind and soul the poorest, lowest, and least moral of the great mass of this country. He hoped they, the visitors, would remember this, and make it a rule to impress upon them that there were "lessons in flowers, sermons in stones and babbling brooks, and God in everything." The noble speaker concluded, amid cheers, by proposing a vote of thanks to the Duke and Duchess of Westminster. Mr. Gladstone seconded the motion, addressing himself to "My lords, ladies, and young friends here to-day." He said that he was reluctant to follow the Earl of Shaftesbury after his able speech upon the value of flowers, but he was glad to give his good word to the Duke and Duchess of Westminster as a testimony to their good work, the penalty they paid for it being to have their praises sounded in their ears. He could not suggest any change from that, unless it were to advise them to change their course of life, to shut their eyes to the wants around them, to shut their ears to the cries for help, and to live for themselves alone. If they would not do this they must expect to have their praises sung before their faces or behind their backs; but one thing he could assure them—that those praises were not empty expressions of compliment. Probably, as a nation, we were wont to boast of our own good deeds, but in this instance, he would not say in the "cultivation" of flowers, but in the art and science of gardening as a whole, it was England that led. Abroad, all gardens, with any pretensions to the name, were laid out on the English plan. To go back in our history no long time—a century—we had reached a period when every human being was in reach of the country; now every one at this time had the advantage of parks and squares; but London now covered such a space that many persons were being gradually removed from contact with Nature. The value of it was apparent from the eagerness with which it was pursued. In the manufacturing districts, however, where for miles and miles there was nothing but dirt and smoke, and where the products of toil covered the whole face of Nature and changed the very appearance of the people, there was no opportunity of enjoyment in parks and gardens. So much the more important was it then that the cultivation of flowers should be encouraged by window and house gardens. The need was increasing, and the opportunity, he hoped, would be improved. It was necessary the dwellings of the poor should be improved; they would be improved, and he hoped some convenience for gardens—horticultural and floricultural—afforded. Gifts of flowers were the means of drawing out the most touching sympathies between man and man. One old woman, having received a gift of flowers, declared that they preached to her; but in gardens and in the profusion of the country he thought some were apt to forget the giver in the gift, and not hear the preaching of the flowers. If we thought, we should find it pleasant to know that by gifts of flowers poor homes were brightened and a means of deep religious education afforded. The right hon. gentleman concluded amid much applause. The Duke of Westminster briefly returned thanks for the vote to himself and the Duchess of Westminster, and was willing to pay the penalty, if such it could be called, when it was accompanied by the pleasure of hearing such speeches. He hoped that the children who had gathered there that day, good plants as they seemed, would bud and blossom into noble men and gentle women, and that their fruit would be good.

LAW.

WHAT ARE TIMBER-LIKE TREES?—(LOWNDES *v.* NORTON).—A question of some interest arose in this case as to the meaning of the words "timber-like trees." The defendant, the Hon. Mrs. Norton, was, under the will of her late father, Mr. Thomas Lowndes, of Barrington Hall, in Essex, entitled to an estate for life, "without impeachment of waste, except voluntary waste," in certain farms at Pontnal Warren, in the county of Surrey; and a suit having been instituted in the year 1862 by Mr. G. Alan Lowndes, a tenant for life in remainder under the same will, an order was made therein that the defendant was not dispunishable for waste, and an injunction was granted restraining her from selling "any timber or timber-like trees" upon the Potnal property. A large number of trees, principally Scotch Firs and Larches, having recently been advertised for sale upon the Potnal estate by the order of the defendant, an application was now made to the Court, on behalf of the plaintiff in the suit, in order to raise the question whether Scotch Firs and Larches were "timber-like" trees within the meaning of the injunction, and the application took the form of a motion to commit for breach of the injunction. Evidence was produced on behalf of the plaintiff to show that the proposed felling was not required for thinning or good management, and that many of the trees girthing more than 6 in. came within the term "timber-like;" and, on the other hand, evidence was produced on behalf of the defendant that the trees proposed to be sold required to be cut in a proper course of management, that the word "timber-like" had no definite meaning, and did not extend beyond the meaning of the word timber—which was confined to hard woods such as Oak, Ash, and Elm—so as to include soft woods such as Scotch Fir or Larch. The Vice-Chancellor (Sir Charles Hall) said he could not hold that the defendant was doing that which was restrained by this order. If it were necessary to consider what were her actual rights irrespective of the order, his Lordship would consider that, having regard to the nature of her estate and interest, and to the fact that she was not dispunishable for waste, her cutting down these Fir trees was not waste. This consideration would assist in putting a construction upon the order. The meaning of the word "timber-like" was not very clearly defined, but his Lordship could not construe it as going beyond timber, except so as to include trees which in due course of growth would become timber. The motion must accordingly be refused, with costs.

NOTES AND QUESTIONS—VARIOUS.

Maclean's Advancer Pea.—I regret to have to corroborate the experience of "P." (see p. 10) regarding the Advancer Pea; it has been a favourite with me for ten years, and has till now invariably given me entire satisfaction, but this year I have only about one-fourth of a crop. My sowing was made in March under very favourable circumstances, and close by it were sown Wheeler's First Early, and Veitch's Perfection; the former has proved a splendid Pea, yielding an abundant crop, and the latter gives promise of all that can be desired. I attribute its failure to the seed not being properly perfected last year in consequence of the bad season.—GRADATIUM, *York.*

Estimating the Age of Trees.—Is there any rule by which one could arrive at a reasonable estimate of the age of old Yew or Beech trees? Perhaps Mr. Berry, or some tree-loving reader, will oblige me with the information.—B.

Hardy Palms Flowering in Ireland.—There are two fine specimens of Chamærops in the grounds at Glasnevin. One of these in rather a sheltered position has repeatedly flowered; the other in a more exposed situation not until this year. The interesting feature of the matter is that the flowers turn out to be of a different sex from those of the other, so that we ("Irish Farmers' Gazette") may expect shortly to chronicle, for the first time, the fruiting of a Palm in the open ground in this country.

Flowers for Hospitals.—At the Liverpool Street Terminus of the Great Eastern Railway, there has been added to the box which for a long time has collected newspapers for the patients at the London Hospital, a box for flowers, which it is hoped the passengers by the morning suburban trains will fill. It is cleared every morning at half-past ten o'clock.—J. R. DROOP, *Stamford Hill.*

To Correspondents.—H. W. Derry, W. J. Hampshire, G. Preston, Sub-South Italy, and others who do not send any name or address with their communications, are reminded that no query is answered which is received without the sender's name and address, in addition to any pseudonym or initials writer may desire to use in the paper.

No. 244.] SATURDAY, JULY 22, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

EDGINGS AND WALKS FOR KITCHEN GARDENS.

CUSTOM, time, and authority are forces all arrayed in favour of these, and yet they are as wrong as they can be. For the following reasons there should not be any walks in a perfect kitchen garden:—

1ST.—CONVENIENCE OF WATERING AND IRRIGATION.—Even in our moist country good vegetable culture is not everywhere possible without thorough watering or irrigation. As at present arranged, watering is difficult, and irrigation impossible, without spoiling all the walks, gravel, edgings, &c. In many parts of the country, especially in Scotland and the moist parts of Ireland, the need of thorough watering or irrigation is not known; but in England it is seriously felt. Three warm days in July show their effects in Covent Garden, inconvenience the housekeeper, and injure the supplies of tender succulent vegetable food at a time when these are more than ever important for health. It cannot be said that either our kitchen or market gardening is what it should be so long as we are unable to reap benefit instead of loss from the sunny weather. For in a garden properly irrigated, a few weeks of warmth would simply give us a better result than we should obtain during a similar number of cold or clouded days. Therefore we shall never have a perfect kitchen garden till all crops liable to suffer from drought may be as promptly and effectually watered as a small plant growing in a pot.

2ND.—TO SECURE GOOD CULTURE.—To get the fullest result from a given piece of ground devoted to vegetable culture, it is necessary that the whole of it be thoroughly turned up, and well enriched from time to time. Walks and hard alleys, gravel, &c., prevent this from being done with ease and thoroughness at present. The whole surface of a perfect kitchen garden should be as much open to the labours of man, or horse, or spade, as a heap of loam lying in a compost yard. In the orthodox kitchen garden, the men may frequently be seen carefully scraping their boots lest anything should get on the walks, just as if they were going into a drawing-room or a Turkish bath. Half the ground thoroughly cultivated would be better than the large areas we frequently see bare in many places or poorly cultivated. As regards the convenience of moving composts, &c., that is more easily secured in a garden free from all obstructions in the way of well-gravelled walks and neatly-kept edgings. In the case of a very large garden, a firm cart-way might in some cases be desirable, but the fact is that the space really necessary for the kitchen garden proper, under a good system of culture, is of a size that such a convenience leading to it is all that is required. The best system for the kitchen garden is a thorough trenching and annual enriching afterwards, and throughout the seasons of greatest growth, such cropping of the surface as never allows the ground to be idle; this system is most easily pursued where there is nothing in the cultivator's way.

3RD.—BECAUSE WALKS ARE NEEDLESS AS A CONVENIENCE AMONG KITCHEN GARDEN CROPS.—Permanent walks may, to some, be a convenience among choice dwarf fruit trees, small fruits, plantations of herbs, &c., but nobody who considers the matter fully will say that they are needed among succulent crops, such as Cauliflowers, Kidney Beans, and the like. A walk in itself is ugly, and a few lines of a useful well-grown crop are far preferable from the point of view of appearance; as to inconvenience from mud, &c., there is literally none, because in any case the cultivator or gatherer has to get on the ground, and in the usual style of elaborately laid-out gardens he has always the needless trouble of taking care not to dirty the walks. In a well-drained garden there is little fear of mud. In case one of the main lines of walk pass through a kitchen garden, we need not consider it, because that is a question concerning the general convenience of the place. It has nothing to do with the present question—the need of walks in the kitchen garden itself.

4TH.—CLEANLINESS AND NEATNESS.—It is much easier to keep a garden clean, the whole surface of which is devoted to crops, than one where a large area is bare, and continually offering in edgings and in gravelled surfaces sunny welcome to the seeds of weeds. Under a better system, all the trouble of cleaning the walks, and keeping edgings, &c., in order, would be saved. As to appearance, there is nothing nearly so beautiful in the ordinary kitchen garden as may be seen in a garden where the whole surface throughout the growing season is covered with healthy growing vegetation.

5TH.—BECAUSE MODERN WANTS ARE DIFFERENT.—The kitchen garden is now planned as it used to be, when many of the flowers, fruits, &c., were all grown within its walls, and in those days there was absolute need of walks in the kitchen garden, from the season of the Golden Crocus to that of the Christmas Rose. But we have changed all that. There has long been a desire to separate fruit gardening from kitchen gardening: the wisdom of this view there is no room to discuss here, but there can be no doubt that in most gardens flowers—hardy as well as tender—have left the kitchen garden for good.

6TH.—ECONOMY.—In many kitchen gardens there is quite a mile of broad, gravelled walks, mainly for the convenience of those who have to perform the pretty frequent labour of cleaning them and the edgings, &c. Space may not be very precious in the places spoken of, but it is none the less true that the ground often wasted in walks would be sufficient to grow vegetables for a family. It is obvious that a market gardener who tried to do his work in a paradise of walks would soon be heard of in the Bankruptcy Court. Market gardeners, like other men, sometimes err, but none of them are simple enough to go to work in this manner. Let it not be thought, however, that their gardens are always untidy because of the absence of walks. In most countries, the better class of market gardens are models which the private gardeners might well study, even from the point of view of neatness and appearance. Is it needful to speak of the absurd waste of means in the making and keeping of walks, edgings, &c., not merely useless, but the actual source of perpetual loss of time and means in keeping?

I could give various other reasons against the common practice, but they are not needed. I know well that the present system is so firmly rooted that few will be able to change to a better plan soon, but, nevertheless, the discussion of the question will probably do good. All waste is a fertile source of weakness, and in the present state of gardening, where so much remains to be done, we can ill afford to spend means and energy in the wrong places. In many cases it will be expedient to leave things as they are in the case of fairly well-formed gardens; but in the case of laying out a new garden, I should certainly separate the fruits—large and small—wholly from the kitchen garden; also, all such plants as herbs which do not require deep or frequent culture, all store or nursery beds which are often visited, the frame ground, plunging beds, &c., I would remove from it altogether. Such walks as convenience demands might be made in the first-named part. The kitchen garden itself, which should be contiguous, might be formed or sheltered in whatever way the needs of the position might suggest. No walks should be seen in it; it would, in fact, be treated as one plot of ground in the highest state of culture to which drainage, trenching, manure, and water could bring it. A. W. H.

SWEDISH TREES AND WILD FLOWERS.

THOSE who are fond of forests should visit Sweden, where the country consists, so to speak, of woods and vast lakes, and where, from the rocky nature of the soil, the most picturesque combinations of trees and water are to be met with on every side. The scenery is not grand like the Alps of Switzerland, or the dark, gloomy fjords of Norway, but it is in many respects more pleasing. The journey across Sweden by the Gotha Canal from Gothenburg to Stockholm, in the early part of June, is one of pure delight, for there are to be seen endless forests of Pine with great Lichen-covered rocks, then miles of

the Silver Birch, that most graceful of all trees, with an undergrowth of Lily of the Valley and Anemones, intermixed in the cultivated parts with Apple and Pear trees in flower, and with Ash, Sycamore, Aspen, and Alder bursting into the brightest green. The fields also are at their brightest, the houses are painted red, the Grass is full of Cowslips, and the people are all in the highest spirits at the disappearance of their long winter. In Stockholm the whole population turns out on Sundays and holidays to picnic, and comes back from the woods laden with the flowers of the Bird Cherry, a beautiful shrub or tree, which we too rarely see here, but which in spring, if planted in quantity, would be delightful in our shrubberies, both for its scent and beauty. In Sweden it grows in profusion. The Lilac is also planted in banks and hedges near houses, and as it does not flower in Stockholm till the middle of June, and is not interfered with by spring frosts, it bears masses of bloom such as we only see here in favourable years. It is said that there is no spring in Sweden, but that the trees leap from winter into summer, and certainly the leaves came out this year almost with the rapidity of a transformation scene. The weather in May and in April had been very ungenial, and vegetation was much retarded. In the north of Sweden, in Dalecarlia, many trees have been greatly injured or entirely killed by the late frosts, and indeed, in some places only the Birch, Ash, Aspen, and Pine seem to have escaped. Driving along the deep, sandy, forest roads of Dalecarlia, you have a dry, clear air, a bright blue sky, and are regaled first with the scent of the Pines, and then with that of the Silver Birches, and it is difficult to say which scent is the most refreshing. In some of the woods a species of Lichen grows among the short Grass, which makes the ground look as if silvered. In all the more open parts grow White Anemones, the Pyrola, and the Lily of the Valley. In the frequent bogs and marshes are endless quantities of Menyanthes trifoliata, of a kind of large Buttercup, and of a plant something like a dwarf white Arum flower. The Water Lily seems only to grow in the south of Sweden. In some parts miles of boggy ground are covered with the Cotton Grass, giving almost the effect of snow. At Mora, at the end of Lake Siljan, in Dalecarlia, the Primula farinosa grows plentifully in the fields, and further up, in Elfdal, the Grass is full of a plant like a dwarf Lily of the Valley, which I took for a Pyrola. In the parks about Stockholm—which are really forests rather than parks—I noticed the blue Hepatica growing wild in profusion, intermixed with the Dog Violet, the Cowslip, and the Anemone. The Stockholm parks are delightful, being left to Nature, and the Djur Gärden or Deer Park is specially noble. It is about 21 miles round, and abounds in old woods of Pine and Scotch Fir, intermixed with fine Oaks, Poplars, Sycamores, a few Hawthorns, &c. Bold, Lichen-covered rocks jut up everywhere. Now you have a view down the glade of a primeval forest; then you see the lake gleaming through the trees; another turn and you see the domes and the bright houses of Stockholm across a foreground of blue water. There is a celebrated eating-house in this park, called Haselbacken, where you can sit and dine, or sup, looking over banks of Lilac and shrubs at the sun setting over Stockholm, listening to the band, and enjoying excellent food at about half London prices. Why can we not have a few open-air restaurants with music in London? In the parks or on the Thames Embankment they would surely pay in summer, and our people would be just as glad to sit at their meals in the open air, and have flowers, and greenery, and music, as foreigners are. To return to Stockholm; another of the parks is called Drottningholm, where also very fine trees are to be seen. The Haga Park seems, in the part I visited, to be largely composed of thickets of the Bird Cherry. One great charm of these parks is the method of going to them. Stockholm is built on islands, and the way of going about is by small steam gondolas, and in less than five minutes you are carried for a penny from the centre of the city to the Deer Park, where you might in many parts fancy yourself altogether in the wilds. The longer trips are also very pleasing with the rock and Fir-crowned shore, among which the villas of the Stockholmers are interspersed. At Gefle, a twelve hours' journey north of Sweden by steamer, is a fine wild park, consisting of a wood by the side of a noble river, which runs foaming along over a series of small rapids. Nothing is done except to cut paths through the trees, and the effect is altogether charming. North of Stockholm the Oak and several other of our common trees do not seem to grow, and it is only in the south that the Holly will stand the winter: it is grown in greenhouses in Upsala.

P.

NOTES ON NEW ROSES.

ON looking at the names of the Roses exhibited at the Crystal Palace and Alexandra Park Rose Shows, I see that the stands contained the best of the older varieties, but few new ones. A northern rosarian, who visited the late Crystal Palace Rose Show and most of the other principal Rose Shows in the south, has favoured me with a copy of his notes in reference to new Roses taken on the spot, and which are as follows:—E. Y. Teas.—Good, perfect in shape, and bright in colour, not large, but finely finished; brighter in colour than Duchesse de Caylus; if large enough will be a grand Rose. Comtesse Serenyi.—Pearly Peach, fine in shape, and really good amongst light Roses. Hippolyte Jamin.—Fine Rose of the Victor Verdier race; likely to be an improved Comtesse d'Oxford, of lighter, yet bright and clear colour; large. Rev. J. B. M. Camm.—Rich bright, rosy-pink; not large, but full and good. Oxonian.—A full, open-shaped flower, of bright lilac-purple and rose; distinct and good. J. Stuart Mill.—Light red, deep in the petal, and good in form; medium size, and of fair average merit. Emily Laxton.—In the way of Monsieur Noman, but darker; deep petals; medium size; likely to be good; not yet sent out. Miss Hassard.—Similar in colour to Comtesse Serenyi; large, but in some cases wanting in finish, altogether a fine Rose. Mr. Prince states that this is one of the finest Roses in habit and freedom of bloom. Robert Marnock.—A dark Duke of Edinburgh, good in size, and likely to be a favourite, not yet sent out. Duke of Connaught.—Fine in shape and colour, but rather small. Mrs. Baker.—In shape like Victor Verdier; somewhat rough, but distinct and good. Isaac Wilkinson.—Very dark in colour and perfect in shape; small, as shown at the Crystal Palace, but, as shown at the Alexandra Park, one of the finest flowers in the whole show; not yet sent out. Marchioness of Exeter.—A distinct shade of rose, large and fine, likely to be really good.

The whole of the above are good and worth growing, but many of the old Roses are still in the front rank, and are as yet unsurpassed; Dupuy Jamin, Etienne Levet, and Mons. Noman were wonderfully fine at the Crystal Palace. Thomas Mills.—This is turning out to be a grand flower; it is fuller this year than usual, and of the most clear and brilliant colour it is possible to imagine. Marie Finger, as exhibited by Mr. Keynes, was a flower of great beauty, and when good is a strikingly fine Rose. Cheshunt Hybrid is very good this year, and is thoroughly distinct from all others. The new Teas, Jean Ducher and Perle des Jardins, are good additions; but I fear the latter will be rather small as a show Rose. The Teas at the Crystal Palace were said to be the finest ever shown; the best, to my mind, were Souvenir d'Elise Vardon, Marie Van Houtte, Madame Bravy, Catherine Mermit, and Niphetos amongst the small-growing kinds, and Maréchal Niel, Belle Lyonnaise, Madame Berard, and Cheshunt Hybrid among strong rampant-growing varieties.

The following information has been obtained from Messrs. Gray, of Chertsey:—Aline Sisley, Tea Rose, new in colour, appears to be free, and the bud long and pointed, such as is sought after for buttonhole Roses. Duchess of Edinburgh, Tea Rose (Veitch).—Very pretty, but not distinct from the old Souvenir de David. La Rosiere, H.P.—A very good Rose, large, full, and of good form; fiery amaranth-red, circumference deep purple; very effective. Villaret de Joyeuse.—A valuable flower of the same colour as Jules Margottin. Gonsoli Gaelano.—Colour of Souvenir de Malmaison, and quite up to its description.

The following notes have been made upon the new Roses by myself from blooms grown in my own garden, and first I will give the Rev. J. B. M. Camm:—With me this Rose is of good size, perfect in form, lovely in colour, and without doubt one of the sweetest Roses grown. Gonsoli Gaelano in the north is a very pleasing Rose, wood smooth, petals extra thick, not full, best when seen in the opening bud state, pretty outer petals, pale pearly-peach, centre a rich salmon-rose; it is not much unlike Baroness Rothschild, and may turn out good. Madame Rose Charmeux.—Crimson with a purple shade; a flat Rose with small petals, quite full, but wants form and finish. Madam Nachury.—A fine large-sized Rose, a shade darker than Peach Blossom, but wants substance and finish. May Turner.—Sent out by M. Verdier, very like Madame Thérèse Levet, both in colour and form, and in point of fragrance quite equal to the Rev. J. B. M. Camm; colour salmon-rose, paler at the edges. Mademoiselle Marie Cointet.—One of the best Roses of recent introduction, and one

which is sure to become a favourite; large, full, and fairly-scented; colour very fresh rose with a pink centre. Antoine Moutin.—A large Rose, full and of good outline; sweet-scented, colour bright rose, outer petals paler. We have, however, a great many of this colour. La Souveraine.—Flowers very large, petals deep, cupped, and of good form; bright carmine-rose with pale reflex. This bids fair to become one of our standard exhibition varieties. Royal Standard.—A large, full, and fine Rose of good form and finish; likely to become a favourite for exhibition purposes.

The Rose season is now at its best in the north of England, and at the time I am writing (July 17) I cannot say that I remember a finer season; the weather has been very hot; the thermometer stood at 90° in the shade on July 16. The older varieties of Roses have been wonderfully fine. I cannot say so much in favour of the new kinds, but we cannot expect two-year-old Roses to beat those of four years.

Rose Cottage, Fencote, Bedale. HENRY TAYLOR.

SHADE FOR ROSES IN THE OPEN AIR.

WHEN visiting the grounds belonging to the New Plant and Bulb Company at Colchester the other day, I was struck with the careful shading provided for some of the choicer Lilies. They were planted in beds with a light skeleton span-roofed house over them. This framework is used to support blinds, which are let up or down at pleasure, as sun or shade is desired. The blinds themselves rest safely under a waterproof coping, that forms the ridge of the skeleton woodwork. Thus protected the blinds last for many years. I remember that similar arrangements used to be made for Dahlias thirty years ago. Under such blinds the flowers last as long again, and come out with a beauty and clearness of colouring impossible in the case of those exposed to the mid-day sun. Surely our best and favourite Roses are worthy of as much, or more, attention than either Lilies or Dahlias; some of them may not bear much confinement; but the subdued shade offered by a blind suspended some way above the blooms is quite a different matter from a cap placed over the head of each flower. In the latter case it is the heat that ruins the colours as much as the shade. But under blinds the heat would be moderated even more than the light subdued. Shading would assuredly prolong the period of blooming, and that would be a gain of much importance. For instance, this year the Rose season has hardly lasted a month; there was scarcely a flower expanded in the open ground until after June 20; there is now (July 19) hardly a creditable one left. All is over, with the exception of a few lingering stragglers. Now with a good situation under canvas, or shade of some sort, the Rose season might have been extended a month or more; and besides, some of our Roses, such as Madame Lacharme, are too delicate for the open air. Place them under persistent shade, and all their extreme delicacy of tint would be preserved and enhanced. For Teas again, what so useful as temporary shade? A framework of this kind might be made highly ornamental and valuable for cutting from, furnished with Teas alone. The blinds would protect them from cold in spring and autumn as well as shield their delicate beauty from the midsummer sun, and so extend, as well as preserve, the season of beauty of Tea Roses, the most valuable of all for cutting, the sweetest in fragrance, and the most exquisite in form. D. T. FISH.

HINTS ON POTTING PLANTS.

AMONG flowering plants the conditions as regards potting vary much. Some species of stove and greenhouse plants, chiefly of the hard-wooded section, require firm potting at all stages, while the herbaceous class generally like a loose and open soil. Heaths, Epacrises, Azaleas, Rhododendrons, and all those species which produce a profusion of small hair-like roots, seem to thrive best in a compost of the hardest texture. It is unnecessary to go to extremes, of course, in potting; but I have seen all the above potted so hard that a pointed stake would, with difficulty, penetrate the soil, and yet the plants have thrived amazingly. In such a case it is essential to leave plenty of room for water, for the balls take it in slowly, and require a large quantity to soak them thoroughly. Less than half an inch should never be left in potting with small pots, and in very large ones the soil should not come within 2 in. or 3 in. of the top of the pot. One can then give the plant sufficient water to soak it at one application. The character of the roots themselves and the habit of the plant are generally good as guides in potting. Fast-growing, luxuriant-foliaged plants (particularly of the ornamental-leaved class) should be potted moderately firm only, and some should hardly have the soil pressed about their roots at all. Such a subject, for example, as the Cyanophyllum magnificum, which is admired for the size and beauty of its leaves, makes the finest specimen when grown in a loose and open soil. Ixoras and Allamandas, &c., grow vigorously in a soil of the same texture, but they ripen their wood and bloom earlier, perhaps, in a tolerably firm soil; they must not be treated, however, like a Heath or Azalea. Caladiums, Alocasias, and similar plants make the fastest and freest growth, and consequently the finest leaves, in an open, fibry soil; and so also does the Balsam. For the latter, a rich, loose soil in a roomy pot is the secret of success. With these conditions, and a genial growing temperature, getting up plants of giant size is only a question of a few weeks. Loosely-potted plants are easily watered, and retain moisture longest; consequently, those plants to which an equable degree of moisture at the root is necessary should be potted loosely. I may, for example, instance the Cineraria and Calceolaria—subjects that do not thrive in a hard soil under any circumstances. Pelargoniums, too, like an open soil, but they may have the benefit of the fingers and thumbs round the sides of the pots each time they are shifted. In potting any kind of plant, the state of the soil is of course an all-important consideration. Ramming or beating is out of the question with a wet soil, or even if it be so moist as to bake; but it must be taken for granted that no one will use soil of such a description.—J. S.

Striking Pelargonium Cuttings in Sand and Water.—Having a clay soil here, I have had some trouble in getting bedding Pelargonium cuttings to strike, more particularly those belonging to the tricolor section. Seeing, therefore, the plan of striking them in sand and water in saucers recommended in your columns, I have tried it, and find that they strike root like magic, placed on a shelf in the greenhouse near the glass in a full sun. Would you, therefore, kindly tell me what to do with such cuttings after they are rooted? Should I plant them out, or pot them? They are intended for next summer's bedding.—G. S. M., *Great Malvern.* [Cuttings rooted in water are apt to lose their tender rootlets, unless very carefully handled. Pot your cuttings when rooted singly in small 60-sized pots, and place them in a close frame until they have become established in the new soil. One of the best ways of rooting cuttings of bedding Pelargoniums is to take them off now and dibble them close together in rows along a south border in the full sunshine, taking care to water them well every evening.]

Window Plants.—No two hardy plants seem to find so much favour amongst the dwellers of our city courts than Musk and Creeping Jenny. About forty pots of the former, and a score more plants of the latter, were staged in good condition at the City Flower Show in Finsbury Circus the other day. The comparative ease with which these two plants can be grown amidst the smoke and dust of London shows that certain good, hardy plants should be selected and cultivated specially for show purposes, and that encouragement should be given them in the prize list. No doubt gifts of suitable hardy plants, established in pots, and available for exhibition another year, would be heartily welcomed by the committee of the City Show, and would make excellent supplementary prizes.—D.

Eucalyptus Flowering in the Isle of Wight.—I have a plant of Eucalyptus now in flower, the seed of which was brought from Port Natal in 1865; it was raised in a hot bed, and when the young plant was a year-and-a-half old, it was planted out in a sheltered situation facing south-west. Its height is now 35 ft., although it lost some 4 ft. or 5 ft. from frost one severe winter. Its girth at 2 ft. from the ground is 2 ft. 6 in., and it varies very little up to about 10 ft. from the ground. The flowers, which are white, surrounded by a hard, woody calyx, are now fully expanded, after remaining in the bud state since the spring of 1875. Has the Eucalyptus been known to flower in England before? [Yes.] I may add that the soil in which it is growing is very stiff, almost approaching to clay.—J. N., *Westridge, Ryde.*

Estimating the Ages of Trees.—Allow me to say in answer to "B." (see p. 68), that there is no sure way of estimating the age of Yew or Beech while standing, without some historic record as a guide, because of the great difference in the rate of growth, as influenced by soil, aspect, climate, and accidental causes. When, however, a tree is felled, its age can be ascertained by counting the rings of growth, as shown on the section of its trunk.—J. J. R.

The Pecan-nut Country.—The belt of country in North America best suited to the growth of the Pecan, is between latitudes 28° and 32° north of the equator. The Pecan as a tree grows well much farther north than latitude 32° but the Nuts produced are small in size, have thick shells, and are generally inferior in quality. The fruit lessens in size and deteriorates in general commercial value in proportion as you go north of latitude 31°, until both the tree and fruit cease to grow about the latitude of the upper line of Kentucky; therefore its culture here is out of the question.

Mr. Thompson's New Poppy (Papaver umbrosum).—It is impossible to speak in terms of too high commendation of this Poppy. Its brilliant scarlet petals with their intense black blotch render it one of the most effective plants which have been introduced for many a day.—H. HARPER CREWE, *Drayton-Beauchamp Rectory, Tring.*

NOTES OF THE WEEK.

GIANT LILIES.—Mr. McIntosh, of Duneevan, near Weybridge, has sent us two stems of Lilies (L. auratum) 10½ ft. and 11 ft. high respectively. The Lilies in his garden are the most superb specimens of flowering plants that we have ever seen either indoors or in the open air. They look down on one as Lilies might in Brobdignagian gardens, each plant a pillar of flowers, and each flower as large as a side dish. They are growing among Rhododendrons, and will serve to show what a revolution these new Lilies will make in our gardens as soon as they are properly grown therein.

GILBERT'S TOMATOES.—Some of the finest Tomatoes we have seen are those recently shown by Mr. R. Gilbert, of Burghley, many of which weighed 14 oz. or more. On cutting up one of these we were surprised to find that a number of seeds had germinated, and that little green plantlets were pushing their way through to the light. Tomatoes are easily grown, and the many who relish them will desire that they should be more frequently well grown.

THE DRY WEATHER.—It is surprising how soon the effect of a few dry days is felt in our gardens and markets. Three or four dry days drive up prices in the London markets; three or four more, and the growers begin to despair, and say they will have "nothing to bring to market if rain does not come soon." There would be very serious inconvenience, if not danger to health in London, if we were to experience six or seven weeks of severe drought. In that case our vegetable supplies would be cut off. We should probably, however, get a small and dear supply from other countries where provision is made against drought. Flowers are much influenced by the drought, and supplies of them have greatly fallen off; Sweet Peas have quite disappeared. In fruit most things are smaller, except Cherries, which are very fine. Strawberry supplies are very short and poor, owing to the heat. Being a fortnight later than usual the Strawberry season has been a very short one. Late Strawberries from the north would now prove a paying crop.

LARGE RED-RAYED LILY.—One of the finest of all the varieties of Lilium auratum has just been sent to us by Messrs. Cripps, of Tunbridge Wells. The flower in question measures fully 9 in. in diameter when naturally reflexed, each broad white segment being furnished with a central strip of chocolate-brown. The spots and papillæ are also of a deep brown, which the white ground colour shows off to advantage.

WHITE EAST LOTHIAN STOCKS.—Mr. Mackellar sends us, from Abney Hall, Cheadle, beautiful specimens of these Stocks, of the value of which as decorative plants he speaks in high terms. They are dwarf (rarely over a foot in height), and both lateral and terminal shoots are densely covered with pure white fragrant flowers, that individually remind one of the blooms of a Cape Jasmine. The specimens sent were sown in heat early in January, and were grown on in a frame until May or June, when they were planted out, and have come freely into flower this month. Among them are three distinct types, the best being that which produces blossoms on the terminal and lateral branches simultaneously.

THE CALIFORNIAN LILIES.—These, to which Mr. Barr has called our attention lately, are of remarkable interest just now from their size and stately port and wonderful charm of colour. By the name Californian we mean the species to which the term pardalinum is generally applied, and under which name are grouped such supposed varieties or sub-species as californicum, puberulum, parviflorum, Hartwegi, Walkeri, &c., all inhabiting the lovely and genial coast or foothill valleys of the long-stretching Sierras and the coast ranges, and varying much according to position, soil, or altitude. Dr. Bolander, who knows much more of these Lilies than any European botanist, groups all the forms of pardalinum under the head of L. canadense, and there is good reason to adopt this course from a botanical point of view. But, nevertheless, there are sufficient differences to justify a name for what may be termed the central type of the splendid races of Lilies we allude to, and L. pardalinum (Kellogg) would seem to have the prior right. This species would seem to vary in spotting, and in the extent and hue of the bright colour of the outer portion of its flower, almost as much as the beautiful-wooded hills and valleys where it grows vary. To give all the various forms of it now in our nurseries different Latin names, and to waste time in "hair-splitting" from keen observation as to the differences of the hue of their leaves, &c., are foolish and not quite harmless practices, tending, as they do, to confuse and puzzle the public. The varieties vary as Potatoes or Peas vary, and we should accept this fact in all thankfulness that plants are not stereotyped. Distinct names should only be given to the more marked and extreme forms, and, as far as possible, distinguishing those by English names indicating their spotting, colour, size, or other peculiarity.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

WHAT are the most suitable classes of hardy plants to furnish good bloom after the numerous and beautiful races of spring and early summer flowers have passed away? This is a most important question, and one which may be best answered now, when a host of effective plants, from Peonies to Irises, have past out of bloom. The heat of summer has put an end to the freshness and gaiety of many of the hill-pasture and Alpine plants, and those now full of freshness and vigour may be depended on during the heated term, which sometimes intervenes before the dawn of autumn. Most precious of the flowers of the season are the various Yuccas now in fine bloom. For stately beauty there is nothing to equal them, and next, perhaps, in value are the fragile-looking Everlasting Peas, not forgetting the white variety of the old Everlasting Pea (Lathyrus latifolius), which is a most desirable plant. These are never more attractive than when running wild over a bank, or through low shrubs. We noticed some half-wild on a railway embankment the other day, and they were charming. Not unworthy of a place beside them is the rosy Coronilla (C. varia), a very graceful, trailing plant, which is quite fresh throughout the growing season; it is excellent for the wild garden banks, &c. The noble-looking Funkia Sieboldi is a grand plant on a free soil; we have never seen it finer than on the Wimbledon peat in Mrs. Marryatt's old garden. There are some attractive plants among the Speedwells that flower just now, notably Veronica longifolia, paniculata, and incana. Campanula lactea is a tall, free-growing kind, with a profusion of very pale bluish flowers—a remarkably fine border plant. The small Campanulas, such as C. muralis, C. Cymbalaria, and C. carpatica, are flowering freely. With the Campanulas may be grouped the graceful Adenophoras, such as A. Lamarcki and communis, now in flower. The Mulleins (Verbascum) are still showy and stately, but are best fitted for copses and the wild garden. The curious and interesting if not very bright-coloured North American Silk-reeds (Asclepias cornuta, incarnata, and speciosa) are also now in bloom, regardless of the heat. A graceful and peculiar plant is Lysimachia clethroides, with white flowers in spikes gracefully bending over; it is a beautiful border plant. Among spring-sown annuals there is much loveliness, particularly in the Godetia section of the Evening Primroses (Œnothera), Nemophilas, Acroclinium roseum, Eutocas, Collinsias, &c. Some of the earlier Asters and Solidagos are in flower, but none suitable for choice collections. Some of the Rudbeckias are showy, such as R. pinnata and R. angustifolia. By far the most remarkable fine-foliaged plant of the season is the Gunnera scabra, of which the specimen at Kew is now remarkable for size and vigour; near it some plants called Asphodeline (Asphodels in fact) bear graceful spikes of yellow star-shaped flowers. The plant called Milla (Triteleia) laxa at Kew, and which seems a smaller and lighter coloured plant than those grown in nurseries round London, is a charming flower, reminding one of the delicate hues of spring flowers. These later Triteleias are valuable garden plants, and will one day be as popular as they deserve. The Red Flax (Linum grandiflorum) is very fine indeed just now, quite a treasure in its way when well grown. Various species of Lythrum are opening their flowers, and they are not without beauty. A Sedum called calabricum at Kew is a handsome Italian species; it is probably in cultivation under other names. The very distinct Erythrochæte palmatifida is in flower at Kew, as is the singular Meconopsis Wallichi, an Indian Poppy-like flower of much beauty.

Treble-spathed Arum Lily.—Your paragraph and illustration of the double spathed Arum Lily (Calla æthiopica) (see p. 55), reminds me of a plant of my own of the same kind which flowered three times in one year. The first time was in March, when it had a treble spathe and two distinct spadices. The spathes were one within the other, their points coinciding with the angles of an equilateral triangle; the second time of flowering was in July, when it had a double spathe and one spadix only, exactly like your illustration; and the third time in November, when it has only a single spathe; it has had no more since.—THOS. RUSHFORTH, *Maybury School, Woking Station.*

Winged Ammobium (A. alatum).

Lily-leaved Adenophora (A. liliifolia).

Fringed China Pink
(Dianthus chinensis laciniatus).

Cut-leaved Speedwell (Veronica incisa).

Ram Rest-harrow (Ononis Natrix).

Great Virginian Speedwell (Veronica virginica).

Acroclinium roseum.

Scarlet Lychnis (L. chalcedonica).

Silk Weed (Asclepias syriaca).

Purple Loosestrife (Lythrum Salicaria).

Scarlet Flax (Linum grandiflorum).

Rose Campion (Agrostemma coronaria).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

CORDYLINE (DRACÆNA) AUSTRALIS IN DEVONSHIRE.

A fine specimen of this plant, reared in, and fully exposed to the open air, is now in full bloom and seeding in the garden attached to Cobham Cottage. This garden is situated on the southern slope of the high ground to the N.E. of Exeter, and within the county boundaries of the city, at an elevation of 350 ft. above the level of the sea, and of which there is an uninterrupted view ten miles distant. The crown of the hill somewhat protects the garden from the north wind; to the east, south, and west winds it is freely exposed. The plant, which may be twelve years old, has been reared by the very intelligent and old-fashioned out-door gardener, James Portbury; it has always been robust and healthy, having never given any cause for anxiety. It has had no kind of protection, or other special care, beyond having its head of leaves tied up together during the winter season, *i.e.*, from the middle of November to the first week in March, with the view of preventing rain, or snow, or frost, penetrating to the heart of the stem. The stem is now 10 ft. 6 in. in height, and 2 ft. 1 in. in circumference. The leaf-head, which is 7 ft. through, or 21 ft. in circumference, is 6 ft. in height, and is composed of a dense mass of leaves, averaging each 4 ft. in length. This mass is so dense, and the leaves are so rigid, that it is difficult to separate them so as to force the head or hand in between them to see or feel the centre. The panicle of flowers is 2 ft. 6 in. through, and projects about 6 in. above the head of leaves, so that the whole plant stands from the ground about 17 ft. On May 20 the flower panicle was discovered showing itself slightly above the head of leaves; on June 24 the flowers were opening freely; on the 30th it was in full flower; by July 10 the lower flowers were passing into seed, the seed-vessels being full and giving reasonable hope that the seed will ripen. The stalk that bears the panicle is about 4 ft. in length, and 7 in. in circumference a foot above where it emerges from the stem. The panicle itself is densely branched and crowded with flowers, which are white and very fragrant, The fragrance is not unlike that of the Lily of the Valley, but more powerful, strongly impregnating the surrounding air. The leaves are not identical with the leaf figured in the "Botanical Magazine," t. 2835, being relatively more slender, more graceful in their outline, and differently veined. A leaf taken from this plant indiscriminately and without any attempt at selection, was 3 ft. 10 in. in length, ensiform in shape, and has evidently been the model, as regards shape, of some of the weapons of the New Zealanders. The leaf, as it emerges from and clasps the stem, has an expansion of 4¾ in.; it then rapidly narrows, so that 6 in. from its attachment to the stem, it is only 1¾ in.; from this it gradually expands to 2¼ in. about 2 ft. from the base, or about its centre, gradually tapering into a fine point at its extremity. The nerves are parallel throughout (and not diverging, as figured in t. 2835); it is very slightly keeled where it is somewhat paler, and has a slight yellowish tint. By the side of the panicle, and in the centre of the leaf-head, a dense bundle of leaves are now forcing their way; this fresh growth of leaf shows that the plant is still vigorous, and not in any way injured by its having flowered.

In the same grounds there are two other plants of a similar kind, but finer in leaf. These were young plants when put out in 1870; the stems are now 4 ft. in height, 1 ft. in circumference; the head of leaves 5 ft. in height by 6 ft. in breadth, each leaf being about 3 ft. in length and 1¼ in. at its widest breadth, and slightly variegated, especially in the keel, without light yellow. There are also four Palms, varieties of Chamærops, all of which have been freely exposed since 1870; one, probably C. excelsa, has grown to a considerable size; the individual fans are 12 in. by 9 in., and are twenty-three in number; they form a dense mass of very robust and rigid foliage. A plant of C. humilis, exposed since 1872, is 3 ft. 6 in. high and 4 ft. in width; the fans are 16 in. by 26 in. The other two Palms were only planted out in 1874 and 1875, and are small plants, but the whole have stood our winters freely exposed to the atmosphere, with the advantage of having firmer and deeper coloured fans than those grown only in greenhouses. They have little or no water given them, and none in winter. A Cupressus macrocarpa, planted about twenty years ago, is now 51 ft. high. Of Bamboos there are several varieties; B. Metake is always in leaf; B. falcata, which had attained a height of 17 ft. in some of its canes, and had hitherto been full of slender leaf, flowered last autumn; this year there are no leaves, only the seeded spikelets; both young and old canes flowered; it remains to be seen if these canes will ever leaf again. B. arundinacea and B. aurea are in leaf; Phormium tenax and the Aralia japonica do well and are luxuriant; Arundo donax pushes up every year to 12 ft. or 13 ft., one may almost see it grow; the variegated variety does not stand the winter in the open ground, and the same may be said of the variegated Agave. The green variety has not been tried; it is said to do well at Torquay. T. S.

ALPINE WINDFLOWERS.

When in early spring, or what is to us in Northern Europe, winter, the valleys of Southern Europe, and sunny sheltered spots all round the great rocky basin of the Mediterranean, are beginning to glow with colour, we see the earliest Windflowers in all their loveliness. These arid and huge masses of mountain that look so barren and verdureless, produce on their sunny sides carpets of Anemones in countless variety of hue, and densely crowded as the Meadow Grass. These belong to well-known and very old favourites in our gardens—the common Windflower (A. coronaria) and the Peacock Anemone. Later on the Star Anemone (A. stellata) begins, troops in thousands over the small cultivated terraces, meadows and fields of the same regions. Climbing the arid-looking mountains in April, the Hepatica soon shows itself nestled in many nooks all over the bushy parts of the hills, and much later on it emerges from the snow in the Swiss Alps, and welcomes the early traveller. Further east, while the common Anemones are aflame along the Riviera valleys and terraces, the lovely blue winter Anemone (A. blanda) is open on the hills of Greece; a little later its congener, the Apennine Anemone (A. apennina), blossoms in Southern Italy. Meanwhile our Wood Anemone has begun to adorn the woody places throughout the northern world, after ascending to high, treeless places on the mountains; at the same time the open wind-swept downs begin to show the purple of the Pasqueflower (A. Pulsatilla), here and there through the brown Grass. The Grass has become tall and richly green before the stately and graceful Alpine Windflower (A. alpina) adorns with its flowers all the natural meadows of the Alps; as soon as its large flowers are succeeded by the long silky heads of fruit, the snow is melting from the high Alpine Windflowers, which soon flower, fruit, and are again ready to take their eight or nine months in their snowy bed. These are but few of many examples of what is done for the northern and temperate world by this precious family of hardy plants.

In our gardens the Windflowers are of the simplest culture and the greatest importance. There is probably no plants which will afford more beauty when naturalised abundantly than the Apennine and the winter Windflowers. With these we may group the various Hepaticas, which are true Anemones. A. angulosa is particularly valuable for naturalisation in the shrubberies and copses in a sandy soil. Excellent, too, for the wild garden are the varieties of the common Anemone, thriving best in sandy, stony, and warm soils, the yellow A. ranunculoides thriving admirably in chalky soils. The distinct three-leaved Windflower (A. trifoliata) would prove a charming plant to naturalise in the wild garden, in copses, &c. For the rock garden such kinds as A. blanda, A. baldensis, A. Halleri, A. palmata, A. thalictroides, and A. vernalis may be reckoned among the most suitable, and with these there is little or no difficulty as to culture. For the garden borders we have, after the common Anemones, A. alba, with large and handsome white flowers; A. sylvestris, like, but larger than the preceding; A. alpina, and its yellow form; A. sulphurea; A. narcissiflora, and the tall, handsome autumn-flowering kinds; all these, too, being of the easiest culture in soils of ordinary fertility and openness. V.

Arum crinitum.—This curious and remarkable plant has been in considerable beauty with me in the open border. I have never till this season succeeded in flowering it. I gave it a slight covering of Cocoa-fibre in the winter.—H. Harpur Crewe, *Tring*.

HEN-AND-CHICKENS OR PROLIFEROUS DAISY.

(BELLIS PERENNIS PROLIFERA.)

THE Hen-and-Chickens Daisy is one of the most singular if not one of the most beautiful forms into which the "wee crimson-tip'd flower" of our fields and commons has as yet sported under cultivation. Our illustration was made from a fine specimen of it recently sent to us by Mr. Ware, of Tottenham. In colour it varied from white and rose to crimson. The main flower, as will be seen, is supplemented and surrounded by a brood of flowers, the produce of buds placed in the axils of the involucral scales, the development of which has in this variety become a constant character, although latent in all other forms of the Daisy. Apart from the singularity belonging to this variety, which has been known in English gardens for at least 200 years, it well deserves culture as a decorative plant for edgings, or for forming tufts in the herbaceous border or wild garden. B.

Hen-and-Chickens Daisy.

ÆTHIONEMAS.

THIS is a beautiful genus of the Arabis family, but differs from the greater number of the Crucifers in the light, elegant habit and wiry stems, and usually glaucous leaves. They are mostly found on the sunny mountains near the Mediterranean, particularly eastward, and are especially valuable for gardens, forming stronger and more free-flowering tufts in them than in a wild state—at least so far as I could judge from specimens seen wild in France and Italy. These little plants will grow freely enough in borders of well-drained sandy loam, but their true home is in the rock garden. A valuable addition has recently been made to the Æthionemas by the introduction of the rather tall Æ. grandiflorum, which forms a spreading bush about 1 ft. high, from which spring numerous racemes of pink and lilac flowers. It, too, grows well in borders in ordinary soil, seems to be a true perennial, and, when in flower in summer, is, perhaps, the loveliest of all the Alpine half-shrubby plants yet introduced. It should be in every collection of hardy flowers, being very effective among the larger and sturdier plants in the rock garden as well as for the border and for groups and beds of very dwarf Alpine and other shrubs. V.

East-Lothian Stocks.—These, according to a correspondent of "The Gardener," are the best of all Stocks. They are generally considered too tender to be wintered anywhere but under glass, and to be consequently unavailable for those who cannot give them that accommodation. Two years ago I put out a hundred or two of them in October where they were meant to flower, with as many of the old Bromptons in case of their failing. During that very severe winter the Bromptons, without exception, perished, while at least 80 per cent. of the East-Lothians escaped and did well. Last year I confined myself entirely to the latter. Two or three dozen plants were kept in a sheltered bed, and as many more potted and kept in a cold frame, to fill up blanks, but so few were these that I was able to hand over nine-tenths of this reserve to friends. As a proof of their comparative hardiness, I may mention that in a bed made up of them and Tom Thumb Wallflowers—the latter to be removed as the Stocks came into flower—the Wallflowers were so cut down by the 14° of frost which we had in April that they were pulled up at once, while the Stocks escaped unharmed. Of course plants so treated are unequal to those wintered under glass and in heat; but they are far superior to any strain of Ten-week or other annual kind which I have ever had, and contain a very large proportion of double kinds. The seed I sow in shallow boxes covered with a pane of glass, about the middle or end of June. As soon as the seed-leaves are fully developed, the seedlings are pricked out 4 in. or so apart, into deeper boxes, say 6 in. or 7 in. deep, filled with open rather light soil, and shaded for a day or two till root-action recommences. Except watering when necessary, they receive no further attention till October. My object is not to have large, coarse plants for planting-out, but short, stubby ones, with plenty of fibrous roots, both of which characters are promoted by my rather poor, free soil; and they are more easily lifted with balls from the boxes than from the open ground. They are planted out about the middle of October, each being staked at once to prevent them from being borne down by heavy snowfalls. They come into flower in June and continue blooming for four or five months.

Varieties of Orchis latifolia.—This, one of the most beautiful of our native Orchids, shows a marked liability to diverge into very charming varieties. One of the most noteworthy of these, or we should, perhaps, say the most so of any of them, is the very distinct and striking variety found by Dr. Moore some dozen years since in a meadow at the base of the Dublin mountains. This is a robust form, growing to a height of from 18 in. to 2 ft. The raceme of flowers nearly equals that of the Madeiran Orchis foliosa, and has the advantage of it in respect of colour, that of the Irish plant being of an intense rosy purple. This variety flowers a fortnight earlier than the typical form. For this reason Dr. Moore, by way of distinguishing it, aptly gave it the provisional name of O. latifolia var. præcox. Another remarkable trait in the character of our plant is its free tendency to seed, the readiness with which the seed germinates, and the precocity of the seedlings growing into flowering plants. Only three roots were transferred from the original habitat to Glasnevin, and one of them found suitable quarters in the artificial bog there. Here it soon formed a stout tuft, producing several flower-stems, forming during a great portion of the month of June each year quite the feature of the interesting spot in which it grows. Now, not alone in the immediate quarters of the original plant are flowering specimens to be seen, but many of them elsewhere in the garden, as for instance, among the pots of Alpine plants, where the seed has germinated spontaneously. What makes this more singular is, that a similar tendency to produce seed is not at all a characteristic of the normal form of the plant. We turn, however, from it for the present to notice another quite novel and very remarkable form of the species, recently discovered by the Hon. Mrs. Barton, Straffan House, Co. Kildare, in a meadow near Glenade, Co. Leitrim, at the base of the Benbullen range of mountains. The finder forwarded to Dr. Moore the only specimen removed, and he regards it as being the most beautiful of all our Irish Orchids. The plant was 14 in. high, and had a close raceme of flowers 5 in. long. It bore, as Dr. Moore remarks, more resemblance to the raceme of some of the Indian Orchids than it does to our native Orchids. The leaves are short and stout, fully 3 in. wide, and beautifully spotted with purple. Only two plants of this variety were met with by the finder when botanizing in that rich district. Dr. Moore suggests that in future it be known to botanists as "Orchis latifolia var. Bartoni."—"Irish Farmers' Gazette."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Fragrant Abelia (see p. 58).—A. triflora, so well figured in THE GARDEN last week, has been since I first saw it at Kew one amongst the plants I wished to get, but like many others recommended from time to time in your columns, I have never seen it in any of the nurserymen's lists that have been sent to me. I often observe some rare shrub or herbaceous plants mentioned in THE GARDEN, but on looking over even the best catalogues it is nowhere to be found.—T. M. BULKELEY-OWEN.

Scarlet Pelargoniums.—Those interested in Scarlet Pelargoniums should pay a visit to the Royal Horticultural Society's garden at Chiswick. A collection of all the newer varieties is now in full bloom in pots, and also a complete collection of the double and Ivy-leaved varieties. As the Society has now made trials of these plants for many years past, we may venture respectfully to suggest that many other important families of plants are in need of similar attention. Having much of the ground devoted to floricultural purposes at Chiswick occupied with Pelargoniums every year is scarcely the best course to pursue, when it is borne in mind that Pelargoniums, above all other plants, are least in want of the Society's help.

Dahlia Maximiliana.—Last summer Mr. Roezl brought with him from Mexico a species of Dahlia under the above name, which he described as being a tree Dahlia. Mr. Rock procured plants of it. They were dormant. The roots differ from the old species, being less tuberous. They were potted and placed in a greenhouse, where they soon commenced to grow; the young shoots appearing from the old wood. In due time they were planted in the open ground. By autumn some of them had attained a height of about 6 ft., when they were lifted and potted and again placed in the greenhouse, where they have continued to flower the whole winter. The flowers are single, and of a deep lilac colour.—Correspondent of "Gardeners' Monthly."

MR. GRIEVE ON HYBRIDS.

It was formerly thought that all hybrids were sterile, but M. Naudin, who has made numerous experiments, finds only about twenty-five per cent. of his hybrids perfectly sterile; indeed, if all hybrids were perfectly sterile, it follows that we could never get races from them by seed, as has been so extensively effected in the genera Rhododendron, Gladiolus, Narcissus, Brassica, Calceolaria, Fuchsia, and others. All the true hybrids of Calceolaria and Fuchsia bear seed as freely as their parents. In order to look at the matter in another light, let us take the genus Pelargonium as an example. Our modern races of Zonal Pelargoniums are descendants of a hybrid or hybrids obtained by hybridising the Horseshoe-leaved P. zonale and the scarlet P. inquinans. Now it follows that if hybrids of this class had been under the law of complete sterility, as Mr. Grieve asserts, our modern varieties of Pelargonium would never have existed. I agree with Mr. Grieve that the words "hybrid" and "cross" should never be used except as expressing, in the first instance, a union between two species; and in the second, between varieties of one species. Again, the words "hybrid" and "mule" are often used as being synonymous, but it would be much better if the word "hybrid" included fertile hybrids only, the word "mule" being exclusively used for sterile hybrids. It not unfrequently occurs, however, that a hybrid is perfectly sterile when its own pollen is used (as in the case of several hybrid Passion-flowers), but perfectly fertile when pollen of another hybrid, or even another species, is employed. Again, Nymphæa Ortgisiana-rubra never bears fertile seeds, owing to some deficiency in the female organs, but the pollen of this same hybrid will fertilise other species. Here, then, we have two kinds of half-fertile hybrids, which require to be distinguished by separate names to express the important distinction which exists between them. There are many other interesting facts connected with hybridism to which I should like to advert, but I must content myself by directing Mr. Grieve's attention to the writings of such hybridists as Kœlreuter, Wichura, Gaertner, Dean Herbert, Anderson-Henry, and Darwin. B.

—— Permit me to state in reference to Mr. Grieve's remarks (see p. 67) that Monocotyledons unite with other hybrids or parent forms. I have hybrids of Gladioli in that direction, and it is not the case that hybrids are always sterile. I raised a beautiful Iris, a hybrid between I. susiana and I. iberica, the flowers being of the size of those of I. susiana and the colour intermediate between that of I. susiana and I. iberica, and this plant is perfectly fertile, having produced a large quantity of seeds. It may be that this is an exception, because I. susiana, like I. iberica, belongs to the same group (Onocyclus); but it is a fact. I must say that I also raised a hybrid between I. susiana and I. germanica, the flowers of which hybrid were of a dull magenta colour, but had no anthers.—MAX LEICHTLIN, *Baden Baden.*

American Plants in Loam.—Year by year the opinion of intelligent men has found expression, and many of the best cultivators now openly assert that any good open garden soil, with plenty of humus, will grow Rhododendrons and Azaleas equally well as the best peat lands of Surrey. While claiming only an equality in adaptation of these different soils, many go still further, and assert that plants grown in peat cannot, without injury, be transplanted to ordinary soils, and thus prefer to obtain plants grown in the latter. If such be the opinion of intelligent men in England, it applies with tenfold force to this country. Under our hot sun, in our exciting air and variable temperature, differing entirely from the moist and equable climate of England, this equality of adaptation in the soil is positively injurious. The failure of Rhododendrons in many parts of the country is doubtless owing to the peat culture, to which so many of our cultivators steadily adhere, while the success of the same plants in small suburban gardens, whose owners know nothing of peat, attests the soundness of our position. The struggling efforts of foreign Rhododendrons to establish themselves here is due in a great measure to their having been grown in peat soil. Many who admire these beautiful plants are deterred from growing them by the idea that they require especial soil and especial culture. To encourage these we have enlarged upon this point, and our opinion is based upon an experience of thirty years. Let them, says Mr. S. B. Parsons, writing in "Moore's Rural," be planted as are Roses and other shrubs, and the result will justify the soundness of our opinion. He, however, utters no caution against planting them in a soil with lime in it.

Small Holdings.—Small holdings make near neighbours; they make good roads; they make plenty of good schools and churches; there is more money made in proportion to the labour; less labour is wanted; everything is kept neat; less wages have to be paid for help; less time is wasted, and more is raised to the acre.

GARDEN VEGETATION IN JUNE.

By JAMES M'NAB, Royal Botanic Garden, Edinburgh.

JUNE has been a pleasant month, notwithstanding the long continuance of easterly winds. Showers have been by no means plentiful, but what we have had did much good. The temperature, upon the whole, was genial; a few nights were somewhat cool, but no frost was experienced. The lowest thermometer markings were on the mornings of the 1st, 4th, 10th, 14th, 16th, and 17th, when 39°, 38°, 36°, 38°, 38°, and 36° were respectively registered; the highest morning temperatures were on the 2nd, 22nd, 23rd, 27th, 28th, and 30th, when 58°, 52°, 52°, 65°, 62°, and 51° were indicated. During the month many flowering trees and shrubs presented a rich appearance, although somewhat later than usual. The scarlet-flowering Horse Chestnuts were remarkably fine, as were also the single and double Scarlet Thorns, particularly the variety known as Paul's new Double Scarlet, which has proved itself a very great favourite. Laburnums showed an abundance of flower, particularly those specimens of the Scotch variety, which were noticed as yielding no bloom last year, but which were covered early in autumn with rich yellow leaves instead. The Flowering Ash (Fraxinus Ornus) was in perfection on June 15, and the Elder showed its first flowers on the 16th; since then the large heads of white flowers belonging to this shrub have been abundant everywhere. The Elder, it may be remarked, is fast becoming a nuisance, seedlings of it coming up, not only in every piece of wild ground, but also in garden ground, amongst the stems of the Portugal and common Laurel, Azaleas, Kalmias, Rhododendrons, &c. Seedlings getting into the hearts of such plants, if neglected to be removed, take firm root, and ultimately rob these shrubs of their moisture, finally causing them to sicken and die. The Ghent Azaleas, which are rich in colour, consisting of white, pink, red, yellow, orange, and crimson, with almost every intermediate tint, are not cultivated in this country to the extent to which they are justly entitled. Conifers are flowering abundantly, particularly those belonging to the genus Pinus, such as P. Jeffreyi, P. Balfouriana, P. Murrayana (true), and P. tuberculata, some of which are flowering for the first time. In the case of the large Pyrus domestica growing in the Botanic Garden, already noticed for its irregularity of blooming this year, the east half is covered with young fruit, the same as happened two years ago, while last year the west side only produced flowers and fruit. At the present time (30th June) the Cratægus heterophylla and C. tanacetifolia are flowering in perfection. It may now be said that the foliage of all the forest and ornamental trees is complete and remarkably full, except, perhaps, that of the Locust trees, Liquidamber, and Deciduous Cypress. The Catalpa tree is still far behind, perhaps more so than any other exotic tree in cultivation in this country. Herbaceous plants last year showed the greatest number of species in flower during the month of May, while this year they are most plentiful in June. On the rock garden 452 species and varieties, exclusive of duplicates, were counted in flower on the 30th, the most conspicuous for colour and flowering being—

Acantholimon glumaceum	Erinus alpinus	Oxytropis campestris
Actinella scaposa	,, hispanicus	,, lacteus
Asperula cynanchica	Eriogonum aureum	Papaver alpinum
Astragalus alpinus	,, subumbellatum	,, aurantiacum
Aster alpinus albus	Galax aphylla	Pernettia angustifolia
Arum palestinum	Gentiana ornata	Potentilla sikkimensis
Bellis rotundifolia	Hutchinsia alpina	Primula Parryi
Calceolaria Kellyana	Hypericum Burseri	,, scotica
Calochortus luteus	Linnæa borealis (Amn.)	,, sikkimensis
Campanula pulla	Linnæa borealis (Scotch)	Rhododendron ferrugineum album
,, turbinata	Linum campanulatum	Rosa pyrenaica
,, ,, alba	Lithospermum fruticosum	Rubus arcticus
Carex capillaris	Meconopsis Wallichi	Saxifraga mutata
,, frigida	Menziesia polifolia globosa alba	,, pyramidalis
,, Vahli	Menziesia polifolia versicolor	Spragueа umbellata
Cypripedium spectabile	Myosotis alpestris	Trifolium alpinum
Delphinium cashmirianum	Nierembergia rivularis	,, uniflorum
Delphinium nudicaule	Orchis maculata superba	Vaccinium Mortenia
Dianthus alpinus	,, maderiensis	Veronica Guthriana
,, neglectus		,, Penguifolia
Epilobium obcordatum		,, rupestris
		,, verbenacea

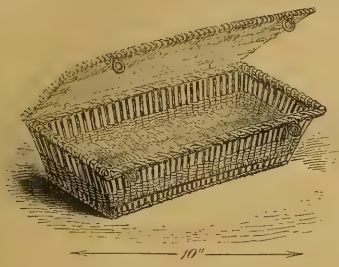
In consequence of the lateness of the season the fields of cereals in some districts of Scotland are wholly yellow with wild Mustard (Sinapis arvensis), a circumstance that would not have happened had the cereals been the highest, which they usually are at this time. If this had been so the Mustard would have been partially smothered and few seeds matured, instead of which a full crop of Mustard seed will be shed, to the injury of the fields and crops for years to come.

Gompholobium angustifolium.—This is quite hardy on the south coast; it flowered here out-of-doors in a pot three years in succession. It is now planted out in the shrubbery, where its large orange Pea-shaped flowers, as large as those of a Sweet Pea, are very showy. Other Australian plants usually grown under glass must be hardy in the south.—W. D. C., *Dorset.*

THE FRUIT GARDEN.

PACKING STRAWBERRIES.

Strawberries are now grown in such enormous quantities for Covent Garden and other London fruit markets that some account of the best modes of packing them may be of service

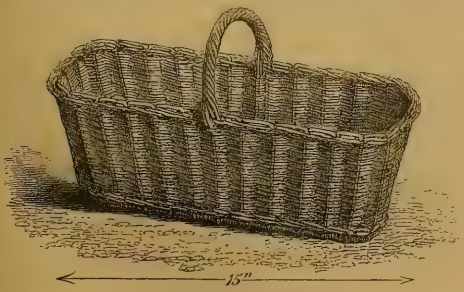


Bordeaux Strawberry Basket.

to those engaged in their culture. Like all other fruits which are required to travel far, Strawberries should be gathered fresh and dry, care being taken to pick them in a ripe state; but all that are over-ripe should be rigorously excluded, as the least amount of pressure and shaking will reduce them to the condition of jam, and thereby injure the firmer Strawberries with which they are associated. To obtain fresh and firm

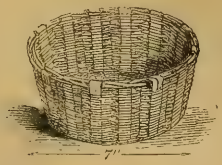
Rouen Strawberry Basket.

fruits, therefore, ought to be the first consideration, and the next, the shape and size of the basket in which they are to travel. If the Strawberries be very large and fine, they may be packed in shallow-sided boxes about 2 in. deep, a single layer or at most two layers being placed in each, the fruit individually being enveloped in a fresh green leaflet. Thus



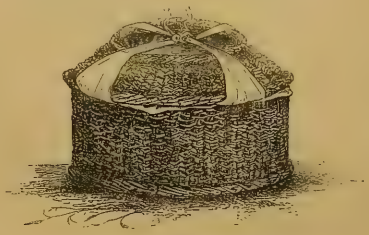
Paris Strawberry Basket.

packed, a number of these shallow boxes or trays can be made to fit tightly into a large packing case. This plan answers well where fine fruits in small quantities are to be sent at a time, but to some private establishment; in the case of large quantities for marketing purposes some other arrangement is necessary. About Paris Strawberries are taken to the markets in oblong baskets of brown wickerwork, as shown in our engraving, and this form serves the purpose tolerably well if the basket be carried in the hand as often happens, or has only to be conveyed a short distance by rail; but they are wrong in principle, for being so deep the fruit is generally



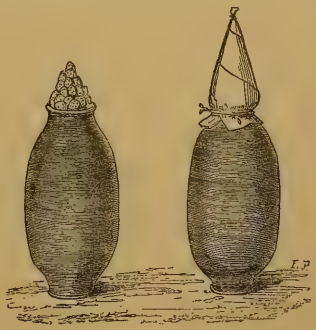
Beauvais Strawberry Basket.

found to be more or less jammed at the bottom. The Rouen Strawberry basket is smaller, but also too deep in proportion to its area at the base. Broad shallow baskets or trays are decidedly the best, for in their case the fruit does not get damaged by the superincumbent weight as when deep baskets are employed. One of the best of all Straw-



Mitchell's Covent Garden Strawberry Basket.

berry baskets, both in principle and practice, is that used by the growers around Bordeaux; these are broad and shallow, and furnished with lids as shown by our illustration. The Honfleur growers, who send such fine early fruit annually to Covent Garden, use a modification of this form without lid



French Strawberry Jars.

but furnished with looped handles, just like shallow butter-baskets. These are about 20 in. in length by 15 in. in breadth, and from 3 in. to 4 in. deep. In baskets of this description Strawberries cross the Channel and arrive in London every day as fresh as when gathered. The Beauvais growers use circular baskets similar to our own punnets, but deeper and

better made, each holding about 2 lbs., but they are in no way superior to our own punnets. Most of the finest of English-grown Strawberries now sold in Covent Garden are packed in shallow punnets, 9 in. or 10 in. in diameter, and in these all, or nearly all, the fruit is exposed to the eye of the purchaser. In the midst of the Strawberry season large quantities of fruit are brought to market in sieves and half-sieves, a sieve containing about seven imperial gallons, but in this case the fruit is principally intended for preserving, and therefore its appearance is a matter of less moment than when it is to be used for dessert. There cannot be the slightest doubt that the broad, shallow English butter-basket, or the Bordeaux basket with a loop handle on the lid, are the best forms of basket to use for transporting Strawberries in quantity either by rail, steamer, or road, and after these the English punnet system is most to be recommended. In the latter case the Strawberries are picked and placed immediately into the punnets by women and children, who carry them when full into the packing-shed, there to be packed in large boxes. A few leaves are scattered in between the layers to keep the fruit moist and cool, and in this way most of the fruiterers and salesmen in Covent Garden are supplied with freshly-gathered Strawberries two or three times a day. Mr. Mitchell, of Enfield, who annually sends large quantities of the finest Strawberries to Covent Garden, uses what may be termed a combination basket, of which we have given an illustration. These baskets are made in the form of half-sieves, and are about 10 in. in diameter, by 7 in. in depth. The lid consists of a flat, bottomless basket, over which a cloth is tied by the corners, as shown in the engraving, and this, placed over the basket, forms a well-ventilated covering, and also prevents the fruit from being crushed by any weighty substance falling on the basket from above. Erect cylindrical jars have been recommended in which to pack Strawberries, but the shape, as will be seen, is against them, inasmuch as the weight of the upper layers of fruit crushes those below them. Such jars are cool, and the fruit may keep fresh for a longer time placed in these and securely tied down with paper than in shallow baskets, but the weight of the jars themselves is as much or more than that of the fruit, and this alone would prevent their ever being largely used for packing purposes. We are indebted to Mr. Gloede, of Hamburgh, for specimens of some of the baskets, of which we have given illustrations. B.

A FEW REMARKS ON POTTING.

Potting should always be performed with an eye to the habit of the plant. Some species require to be potted very firmly, and others the reverse; while there are many which moderately firm potting, as it is called, suits best. Let us take Vines for example. These some pot quite loosely—simply putting the soil round the roots, giving the pot a thump on the bench to settle it, and leaving watering to do the rest. Those who advocate this plan point to the strong roots which the plants make, and which are usually coiled round the sides of the pot and chiefly among the crocks—a very undesirable state of things. The object of filling a pot full of rich soil is to supply the plant with food in little space; but unless the roots run through the whole body of the soil in a regular way this purpose is partially defeated, and it certainly cannot be accomplished by loose potting, for the roots run straight to the sides of the pot, and miss the great bulk of food intended for them. I have tried both plans many times, and decidedly prefer to pot firmly. One distinct and constant effect of firm potting is that the plants rarely root through the bottom of the pots; whereas, when they are potted loosely, the main roots are continually pushing through into the bed, and, as cultivators know well, they have to be lifted at intervals to prevent it, which is a loss of roots and also a loss of vigour. For the last few years I have had some of the finest pot Vines I ever grew; they have been potted unusually firm, and I never have had occasion to move them all the summer. My last year's plants are yet standing where they fruited—they have not been moved since last November; and, though they have a good soil beneath them to tempt them, they have not pushed a root through the bottom of the pots. I strike the eyes on turf, and, when they are transferred to their rooting pots, the soil to the depth of about 2 in. above the crocks is rammed quite hard with a broad-ended wooden rammer; the next layer is only moderately pressed, and the top layer is put on quite loosely. The result of this treatment is that, though we get very strong, short-jointed, and fruitful Vines, they make no long fleshy roots, but fill the pot instead with a whole host of small fibrous roots, which crop up so close to the surface of the pot that we are unable to remove any soil to make room for a top-dressing when the Vines are started, and simply give each plant a little of Standen's manure and nothing more. With the Pine-apple it is the same. Loosely-potted plants root through into the plunging material, such as tan; but I never saw a root protrude from a plant that had been firmly potted beneath. The

Fig,

as everyone knows, is a subject that requires hard potting. It is such a vigorous rooter, that, unless pot plants are well rammed under the ball, they will surely find their way through the bottom of the pot, and it is then astonishing what a rampant growth they will make. In potting Figs—large plants—3 in. or 4 in. of the soil in the bottom of the pot should be rammed as hard as it can be made with a wooden rammer. Unless the soil is too wet for potting purposes, there is little danger of overdoing it. The roots will permeate it soon enough, and the resistance they meet with will cause them to ramify upwards towards the surface, and through the ball generally. Many re-pot their Figs annually; but the practice is unnecessary, for a pot of good soil should sustain a plant well for two or three years with annual top-dressings, if the roots can be induced to lay hold of it in a proper manner. We always think that we have the best crop of Figs when the plants are not re-potted, but only top-dressed. With regard to

Strawberries,

an eminent fruit grower has stated that they should be potted as firmly "as the fingers and thumbs can make them," and one can readily believe it. In the open quarter Strawberries like a deep, open soil; and they too will send their roots down to a great depth; but with pot plants for forcing it is different. The less-sized pots they can be crammed into consistently, the better. The object should be to get the pots well packed with roots before winter; 4½-in. and 5-in. pots, and for the most vigorous growers 6-in. ones, are as large as should ever be used. The last size is rarely employed; the 5-in. suits almost all kinds, and if the plants be potted tolerably hard, it is as much as they can do to fill the pots before October, after which time it is preferable that the plants should mature rather than prolong their growth. In the case of Strawberries, however, it is possible to make the soil too hard, as has been proved. Under the roots, next to the drainage, the soil may be pressed hard enough, but in filling in round the plants it need not be packed quite so firm. Coming to

Orchard-house Trees

in pots, Mr. Rivers says the soil about the roots should be "regularly pounded with a heavy pestle," and he attributes failure in most cases to loose potting. In potting such trees, if the soil be at all light or friable, it is certainly difficult to ram it so hard as to cripple their root action more than is desirable. All stone fruits at least exhibit marvellous power in penetrating hard soils. If the soil be healthy, the nearer it approaches the consistency of a soft burnt brick, the better they seem to like it. When the soil is rammed so very hard, however, in pot culture it is particularly needful to attend to watering, as the hardened mass of soil soon dries. In orchard-house culture, firm potting, plunging, and liberal watering are points of more importance than anything else.

Chef.

Black Strawberries.—Can any of your correspondents tell me where I can purchase Black Strawberry plants, viz.—Black Hautbois, Mulberry and Black Pine? I have been deceived by a nurseryman, who furnished undoubted references, and from whom I last year ordered 500 Mulberry, 300 Hautbois, and 300 Pine. They have all turned out Red—not a Black one amongst them.—Henry Rains, *Fernhurst, Southborough, near Tunbridge Wells.*

SOME NEW EARLY AND LATE PEACHES.

Alexander's Early.—A chance seedling on the farm of Mr. O. A. Alexander, near Mount Pulaski, Illinois. This new Peach ripened here last season, towards the last of July, two weeks before Hale's Early; tree vigorous, productive; the fruit showy, of good flavour, and promises to be an acquisition as an early market variety and for home use; leaves with globose glands; flowers large. Fruit medium, nearly globular, slightly depressed; suture shallow, ending at the apex, which is slightly sunk; skin greenish white, nearly covered with deep, rich red, almost purplish in the sun; flesh whitish with a tinge of green, sometimes a little stained next the skin; a little firm or half-melting, juicy, sweet, or slightly vinous, white at the stone, to which it adheres slightly, and which is small.

Amsden's June.—A chance seedling on the grounds of Mr. L. C. Amsden, near Carthage, Missouri; tree vigorous, productive, and it is said to ripen two or three weeks earlier than Hale's Early, but not having fruited it here, cannot say as to time. Fruit received July 13th from the raiser, where the season is earlier; leaves with globose glands, flowers large. Fruit medium, roundish, slightly depressed; suture rather broad, shallow, extending a little beyond the apex, which is slightly sunk; skin greenish-white, nearly covered with light and dark red, almost purplish in the sun, and somewhat mottled in the shade; flesh greenish-white, white at the stone, to which it slightly adheres, and which is small; flesh half-melting, juicy, sweet, slightly vinous, and very good.

Cook's Late White.—A chance seedling in the garden of an unknown person in Philadelphia, but introduced by Mr. Joseph Cook, of Salem, New Jersey; it is a large Peach, highly esteemed and popular where known for market and family use. Tree vigorous, an abundant bearer; flowers small; fruit large, roundish, a little inclining to oblong; skin pale whitish-yellow, a shade of pale red where exposed; suture small, extending a little beyond the apex, which is a small point; flesh white, a little stained with red next the stone, juicy, melting, sweet, rich, and delicious; free stone. Ripe last of September.

High's Early Canada.—A seedling raised by Mr. Abraham High, Jordan, Ontario, who claims that it is as early or a few days earlier than Early Beatrice, larger and better quality; and the fruit he sent me was very similar in size, form, colour, and quality to Alexander's Early, Amsden's June and Honeywell, and I am inclined to think they are all seedlings, varying slightly, of one kind—probably Hale's Early.

Hill's Chili Peach.—It is pretty well ascertained that this Peach originated on the farm of Mr. Wilcox, of Riga, Monroe County, N.Y., more than sixty years since, and is still healthy and bearing fruit; it was first called Connecticut Peach. The tree is hardy, vigorous, very productive, and is considered a very valuable market variety. It is also said to reproduce itself from seed, and the many names by which it is called in different localities is no doubt the result of its reproduction. Fruit medium oval; suture slight, ending a little beyond the apex, which is a small point; skin deep yellow, shaded with dark red, often dark spots or blotches of brownish red where exposed; flesh deep yellow, red at the stone, moderately juicy, half melting, sweet, vinous; separates freely from the stone which is rather small; ripens the last of September and first of October. [Synonyms—Cass, Seagrove; Climax, Seagrove's Smolk; Connecticut, Stanley's Late; Jenny Lind; Leopard, Sugar; Madison, Wilcox; Queen of Sheba.]

Honeywell.—A new variety, raised by J. Honeywell, Randolph, Ohio; a handsome early Peach, ripening a week or two before Hale's Early, and, growing here last season side by side with Alexander's Early, was two or three days earlier; tree is vigorous and productive, and promises to be valuable; leaves without glands, flowers large; fruit medium, nearly globular, a little flattened; suture slight, rather shallow, extending a little beyond the apex, which is small; skin greenish-white, nearly covered with light and dark rich red; reddish-purple where fully exposed; flesh whitish, juicy, half melting, sweet, slightly vinous, and very good; adheres slightly to the stone, which is small and not stained.

Nix's Late White.—Origin said to be Newtown County, Georgia; tree vigorous, productive, and ripens a week or two later than Heath Cling; leaves with reniform glands; flowers large; fruit large, roundish, inclining to oblong; suture medium, extending to the apex, which is slightly sunk; skin white, downy, a shade of red in the sun; flesh white to the stone, to which it adheres; rather firm, juicy, sweet, vinous, and rich. Ripe middle and end of October.

Petit's Imperial (Imperial Yellow).—This was raised by Mr. D. Petit, Salem, N.J. It is a large, handsome late Peach, one of the richest of the yellow-fleshed varieties, and continues in use longer than most kinds; tree vigorous, a moderate bearer generally, but some seasons produces good crops; flowers small; fruit large to very large, roundish, slightly depressed; suture shallow, extending a little beyond the apex, which is small; skin deep orange-yellow, shaded and mottled with dark rich red; flesh yellow; red at the stone, juicy, melting, rich, sweet, and high-flavoured; free stone. Ripe last of September.

Thurber.—A new variety, raised from the seed of Chinese Cling, by Dr. Berckmans, Rome, Georgia, and named after his friend, Dr. George Thurber. It is a handsome and very promising variety, and as it is said to carry well, and being of good size, it will be an acquisition for market and general use; tree very healthy, vigorous, and symmetrical in form; flowers small; fruit large, roundish, inclining to oblong; suture light, extending to the apex, which is slightly sunk; skin slightly downy, creamy white, shaded and mottled with pale red and carmine where fully exposed; flesh white, a little red at the stone, which is free; fine grained, very juicy, melting, slightly vinous, rich, and delicious. Ripe from middle to the end of July in Georgia.—Charles Downing.

Early Peaches.—Hale's Early, according to the "Florist," is the best early Peach in this country, ripening on the open wall some days before the Early York or Acton Scot. The fruit is also of larger size and finer in quality than any other early Peach. It may be described as of medium size, roundish, with a deep suture on the side. The skin is of a dark crimson colour on the exposed side, with a thick coating of down, shading off to a greenish-yellow streaked with red; when grown under glass the colours are much brighter and clearer. The flesh is of a dull greenish-yellow, very tender, melting, juicy, and richly flavoured, and parts freely from the stone. The flowers are large, and the leaves have round glands. This fine Peach comes to us from America. It has been now for several years in cultivation in this country, so that its high merits are becoming pretty well known. It is especially recommended by Mr. Pearson and others. In constitution it is as free and vigorous as the Bellegarde, and, like that variety, a certain cropper. Early Victoria is another fine early Peach, a day or so earlier than the Early York. It is exceedingly well adapted for cultivation under glass. For wall culture it is somewhat tender. The fruit is rather below medium size, roundish; skin very thin, bright red on the exposed side, pale greenish-white with small red streaks in the shade. The flesh is yellowish-white, very juicy, tender, and melting, with a rich flavour. The flowers are large; leaves without glands. This fine Peach was one of the first of the seedlings raised by Mr. Rivers from the Early York, and was named in honour of Her Majesty Queen Victoria.

Mrs. Pince's Black Muscat Grape.—Is it generally known that this fine Grape, which we so seldom see grown in quantity, is one of the best and most useful of our late-keeping varieties? As a fine-flavoured, late-keeping Grape it has few equals, and when grown under favourable circumstances it is an abundant bearer, and one which sets more freely than any other Muscat. It comes into use in January and February, after the Hamburghs and Muscat of Alexandria are over, and obviates the necessity of using so early in the season Lady Downes and other later-keeping varieties. Mr. Pragnell, of Sherborne Castle, has a large house entirely devoted to it; it contains fourteen Vines, planted 2 ft. apart, seven of which are permitted to root, whilst their neighbours are vigorously making new rods to supply next year's crop. When the pruning season arrives, the rods which bore fruit this year are cut down closely, the newly-made rods being allowed to remain their full length in readiness to produce a crop the following summer. It will thus be seen that each Vine has the benefit of a year's rest to recruit its strength and make a new rod. The seven Vines in bearing are generally allowed to carry from ten to twelve bunches each, averaging from 2½ lbs. to 3 lbs. per bunch. They receive little or no heat until they are in bloom, when they are treated to a rather brisk temperature to induce them to set, after which the sun supplies all the heat required by them. In order to ripen them well, abundance of air and liberal supplies of water are given. If Lady Downes, Black Alicante, and Mrs. Pince be placed side by side, the last suffers by comparison, but its fine form of bunch and rich Muscat flavour are not to be found in any of the other varieties. As an early Grape it is not worth growing, as it seldom succeeds, but for what may be termed an intermediate late variety, it is most valuable.—S.

New Melon, "First Lord."—This is a large, egg-shaped, smooth, green-fleshed variety, raised and named by Mr. Gilbert, of Burghley. A fruit of it staged last week at the City Flower Show when cut proved so luscious and well-flavoured that the judges unanimously granted it a first-class certificate of merit.—A.

PLATE XXX.

THE PENTSTEMONS.

(WITH A COLOURED FIGURE OF P. DIFFUSUS.)

By J. C. NIVEN, Curator, Botanic Garden, Hull.

AMONGST genera peculiar to the northern portion of the so-called New World, to which our herbaceous borders are indebted for their gaiety, there is, perhaps none more important than the genus Pentstemon, not a single representative of which occurs indigenous, so far, at least, as my knowledge goes, outside the wide bounds of the North American Continent. There, amid the rocky ravines whence the mighty rivers of that part of the world derive their origin, must the home of the Pentstemons be sought. Varied in colour, and profusely floriferous, as well as possessing a graceful habit of growth, Pentstemons have a value for the decoration of our flower-beds, rock gardens, and shrubberies that few other plants possess, the more so as their blooming season may be said to be distributed over a period of at least five months, commencing with the charming blue P. procerus in June, and finishing off with the endless varieties of P. Hartwegi, in all shades of rose, scarlet, and crimson, whose beauty holds its own even in the dull, dreary month of November, long after the more fragile denizens of the flower garden have become things of the past.

P. diffusus.—This plant, which has been well selected for illustration, under Douglas's old and appropriate title of P. diffusus, is one that is by no means as frequently met with in our herbaceous borders as it ought to be; yet what can be more elegant than are its blossoms, varying in colour as they do, from amethyst-blue in the upper lip to a warm rosy-purple, merging into yellow at the base of the somewhat inflated tube; these are arranged in a lax, branching panicle, the leaves, as they assume the bract-like character, gradually decreasing in size, but still retaining the irregular jagged serratures that especially belong to the broadly ovate and partially cordate, radical leaves. The whole plant is glabrous, with a slightly purple tint on the veins and stem; it is of a somewhat shrubby character, and hence, though perfectly hardy, and capable of enduring the vicissitudes of climate and of extreme cold with which, in its native locality, it is associated, we find that it is liable to succumb to the damp of our early winters; or, should it survive this, to the keen incisive character of north-eastern blasts with which our climate is only too familiar, scorching the early spring growth as though it had been subjected to the lee-side of a blast furnace. I am of opinion that the same plant has been cultivated years ago under the name of P. Mackayanus; at least my impression is that it is identical with a plant of that name for many years cultivated at the base of the fine conservative wall of the College Botanic Gardens, Dublin, where so many fine old plants have become almost naturally domiciled; its true name, however, is that under which we here recognise it, than which, owing to its diffuse and spreading habit of growth, none could be more appropriate. Like all the Pentstemons it is readily increased by means of cuttings, and possibly would come true from seed, but in this country these are rarely matured. It is a native of the rocky ravines of the tributaries to the Columbia River, where it was originally found by Douglas, and has since been discovered extending south, far down into the Oregon territory.

P. Richardsoni of Douglas (laciniatus of Nuttall).—This is a closely allied species to the preceding, so close indeed that possibly it would be more correct to recognise it as a variety. The leaves are deeply divided, the stems ascending with a tendency to develop roots from the prostrate portion; the flowers are purple throughout, and lack the amethyst tint on the upper lip, which gives the special beauty to the preceding; they are also arranged more loosely in the panicle; the deep divisional character of the leaves extends even to the calcine lobes, which are also notched. It is a native of bare, dry rocks on the Columbia River, and, though capable of standing any amount of cold does not like our damp winters; hence a few reserve plants should always be kept in an airy frame, else it is liable to die out. I apprehend the plant known as P. argutus of gardens is either a variety of this, or very possibly a hybrid between it and the preceding species.

P. triphyllus of Douglas is another allied, though remarkably distinct, species. It has round, branching, wiry stems of dwarf stature; the radical leaves are sessile, acute, and sparsely-toothed, arranged in threes, hence its specific title; those of the stem are linear, entire, and opposite. The flowers are small, arranged in a very scattered panicle, blue as regards the limb, which expands at the top of a short, delicately purple-tinted tube. It was found by Douglas—who, by the way, may be said to be the discoverer of almost half the species belonging to this genus—growing amongst the granite and schist rocks of the Blue Mountains in North-west America, and it has since been discovered in the northern part of California. I fear this plant is not at present in cultivation, nor do I believe that it ever became an established occupant of our gardens. It is well worthy of re-introduction, and possibly ere long we may have a more extended opportunity of testing its adaptibility to our climatal conditions more successfully than could be done heretofore.

P. Jaffrayanus of Hooker, as figured in the "Botanical Magazine," is, I think, only a broad-leaved form of Bentham's P. azureus, of which also P. glaucifolius of Gray is a synonym. It is a smooth, glaucous plant with entire, broadly-lanceolate leaves. The flowers are a deep blue, gradually shading off to purple at the base of the tube. It is a native of Clear Creek in North California. It forms a handsome border plant of dwarf stature, and not being what may be called a good persistent perennial, should always be supplemented by a young stock of seedlings, which will bloom much more vigorously than old plants.

P. heterophyllus of Lindley, although in some structural peculiarities allied to the preceding species, is abundantly distinct in its twiggy growth, its narrow almost linear leaves, the rosy-purple flowers being produced singly or rarely in pairs; as, however, its specific title indicates, the leaf character is by no means constant—the plant, in this respect, being subject to considerable variability. It is a native of California, and though by no means as showy as many of its congeners, it is a plant well worth cultivating.

P. glandulosus of Douglas, though lacking brilliancy of colour, possesses a marked distinctive character in the profusion of short glandular hairs with which the entire plant is covered. The stems are erect and purplish, attaining a height of 2 ft. to 3 ft.; the radical leaves are ovate-lanceolate, the blade decurrent down the petiole; those of the stem are broad toward the base, concave, and amplexicaule, gradually narrowing into the foliaceous bracts, which subtend the groups of pale purplish flowers, the tubes of which are ventricose, the limb forming two projecting lips. It occurs on both the Rocky and the Blue Mountains at an altitude of 6000 or 7000 ft.

P. perfoliatus of Brongart is closely related to the preceding, differing chiefly in the fact that the leaves of the stem are not only amplexicaule but connate, the base of the opposite pairs of leaves being united together to some extent; the flowers are similar in colour but shorter, and every part of the plant is pubescent, including both calyx and corolla. It is a native of the Rocky Mountains, seeds freely, and appears to retain its specific character with wonderful constancy when grown from seeds, which it produces and ripens abundantly.

P. campanulatus of Willdenow is an old inhabitant of our garden borders, introduced as far back as the close of the last century. It is a slender-growing plant, attaining a height of about 18 in., branching freely, and in the southern counties acquiring an almost shrubby character; the leaves are sessile, linear-lanceolate, quite smooth, and regularly and sharply serrated at the margins; the flowers are nearly campanulate, rose-coloured, short as compared with their width, produced in one-sided racemes. It continues blooming for a long period, as the primary branches are succeeded by the secondary ones. It is a native of Mexico. P. pulchellus is a garden name given to what I believe is nothing more than a seedling variation of this species.

P. Cobœa of Nuttall is one of the most showy species of the genus; its roundish, downy stem attains a height of about 3 ft.; the root-leaves are broadly ovate and spathulate, those of the stem ovate and cordate; the panicle is foliaceous; the corolla is large, widely inflated in the tube, and of a creamy-white colour suffused with the most delicate purple tinge. The lobes of the limb are widely expanded, beautifully veined with pink, and marked with yellow blotches. It was introduced into this country by Drummond from the interior of Texas, but had been previously discovered and described by Nuttall, who found it abounding in the valley of the Red River. I question much if the true species be at present in cultivation. Some years ago it was to be met with occasionally in Scotland, where it appeared to thrive well, but never, to my knowledge, was it successfully cultivated in our English gardens. I have sown seeds over and over again obtained from Continental gardens under the name, but they have invariably turned out to be P. Digitalis, which, though closely allied in some respects, is so far inferior as to be scarcely worthy of comparison with the species I have just described. Should this meet the eye of any one who has the true plant in cultivation, I shall only be too glad to learn that my surmise as to its extinction has been wrong.

P. Palmeri of Asa Gray is a noble species, possibly one of the noblest amongst the herbaceous forms we have in cultivation. It

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PENTSTEMON DIFFUSUS.

grows to a height of 5 ft. or more. The leaves are all smooth, of a glaucous, grey hue; those of the lower part of the plant are supported on petioles fully 3 in. long; they are of considerable substance, broadly ovate, and irregularly dentate; those of the stem are first sessile, then cordate, in the latter condition acquiring a much greater breadth of development, the marginal indentations, though less, being still well marked, and their distinct parallel veins or nerves remind one of the broad leaves that subtend the verticels of flowers of the Yellow Gentian. The flowers are widely inflated, white at the base, gradually shading into a rosy-purple upwards. The limb of the corolla is distinctly bilobate; the two upper segments are crimson-purple, slightly reflexed; the lower segments are very largely developed, of a rosy-purple tint. The inflorescence forms a bold terminal panicle of pyramidal form that reminds one considerably of the inflorescence of the Horse Chestnut on a large scale; the bracts are exceedingly small, and those, as well as the foot-stalks of the flowers, are covered with a dense mass of glandular hairs. It is a native of Arizona and Utah, where it occurs as well as on the Sierra Nevada at an elevation of 5000 ft. or 6000 ft.; it was introduced by Mr. Wm. Thompson, of Ipswich, who has devoted much attention to the genus, and who, we believe, is in prospect of introducing to cultivation several other equally valuable and interesting species, which at present we only know by description.

P. Digitalis of Nuttall is a broad-leaved, free-growing species, of erect habit; the lower leaves are broadly ovate, tapering down into the foot-stalk, those of the stem, sessile, and almost cordate; all are coriaceous, perfectly smooth and slightly serrated at the margins; the stem attains a height of from 2 ft. to 3 ft., and the flowers are produced in groups of twos and threes, forming a lax, conical panicle; the corolla is short, widely expanded at the mouth, white, with a violet tinge, on the upper side of the tube, sparsely covered with short, glandular hairs, as are also the calyxes and the flower-stalks; the anthers are, before they expand, of a deep purple colour, forming a pretty contrast with the delicate white throat of the corolla. This species appears to enjoy a wide distribution, extending through Illinois, Arkansas, Louisiana, and Georgia. We have two varieties in cultivation, one under the title of P. venustus, which I apprehend is identical with Asa Gray's P. Digitalis var. multiflorus—certainly not the true P. venustus—it is of smaller stature, the cauline leaves being narrower and more acuminate; the flowers are only about half the size of those of the typical species and are supplied with fragile hairs on the lower lip; they are also produced in greater abundance forming a dense, pyramidal panicle; on the whole the habit is neater and the plant altogether more compact. The other variety, which I have grown under the name of P. violaceus, differs only in che more markedly violet tint with which the flowers are suffused.

P. deustus of Douglas has a somewhat slender, ascending stem, which, when in bloom, attains a height of 12 to 18 in.; the leaves are smooth, ovate, supported on long stalks, the lower ones spathulate and blunt-pointed, all serrated; the flowers are small, ochroleucous, arranged in dense panicles; it was found by Douglas growing in scorched rocky districts in the interior of Columbia, and does not appear to have lasted long in cultivation after its original introduction.

P. attenuatus of Lindley has an erect habit and taper-pointed leaves, ochroleucous flowers arranged in lax panicles; the buds before expansion are almost a canary yellow colour as figured in the Botanical Register; it is, however, noted by various botanists as sulphur-yellow, blue, and purple, so possibly in respect of colour it must be considered to be variable. There is a plant in cultivation under this name, but certainly it does not correspond with Dr. Lindley's figure.

P. confertus of Douglas has ovate, lanceolate leaves of thinner texture than the preceding, somewhat straggling stems, the leaves of which are 4 in. or 5 in. apart; the flowers are small and arranged in dense masses or verticels; though by no means showy it is a very distinct species. It is a native of the interior of Oregon and the Rocky Mountains.

P. procerus of Douglas, though considered by Asa Gray as only a variety of the preceding species, and recognized by him as P. confertus, var. cœruleo-purpureus, is, in my opinion, after many years cultivation of both, well deserving of its original, distinct, specific title. I believe both P. nitidus and micranthus are synonyms; its leaves, and indeed every part of the plant, are glabrous; it is of a creeping habit of growth, sending up from the tufted base numerous, flowering stems 6 to 12 in. high. The flowers are small, in densely-arranged verticels, and, being of a lovely amethyst blue, it forms a charming plant, adapted alike for the border or rockery. It seeds abundantly, and grows freely in any ordinary garden soil: it is, as I before stated, the earliest to blossom of all the Pentstemons, and forms, in the month of June and the early part of July, a most attractive feature in the herbaceous border. Unfortunately, there is no succession of bloom, the lavish profusion while it lasts apparently exhausting the plant's vital energy for the remaining portion of the season. This species enjoys a wide distribution along the Rocky Mountains, where it is generally found growing in swampy meadows. Grown from seed, which it produces freely, it is liable to considerable variation as regards the intensity of its blue colour.

P. humilis of Nuttall is a very distinct Alpine species, of exceedingly dwarf stature, as the name at once indicates, rarely exceeding 6 in. or 8 in. in height; its leaves are of a light-green, ovately lanceolate, gradually narrowing up the stem, which is terminated by a short raceme of flowers of large size as compared with the stature of the plant. These are almost sessile, and present a charming mixture of rose colour and bright cœrulean blue. It blooms in the early part of June, and is a native of the Rocky Mountains, abundant about Pike's Peak. As a grower it is a little shy—at least such is my experience; others, however, may have been more successful.

P. pubescens of Solander.—Although the specific name given by Solander would seem to indicate a constantly pubescent character, our plant, no doubt the true one, appears to vary considerably in this respect; from the same batch of seedlings some will be almost glabrous. There is a similar variation in the cauline leaves; in some plants they will be broadly lanceolate, in others almost linear. The stems are ascending, the radical leaves are ovate and acuminate, with slightly serrated margins—those of the stem when broad are somewhat undulate—the panicle is broadly branched and foliaceous; the flowers are of a delicate, soft, rosy-purple or lavender tint, and contracted at the mouth of the tube; they are covered, as to corolla, calyx, and foot-stalks, with a dense, short pubescence. It appears to enjoy a wide distribution throughout the States, from Canada as far south as Florida.

P. lævigatus of Solander, though by some considered as a synonym for the last species, has, in my opinion, characteristics sufficiently distinct to warrant its detention among the specific types. Its foliage and leaves are usually pubescent; the corolla, though possessing considerable similitude to the former, is not contracted at the mouth, and the flowering panicle is devoid, or at least nearly devoid of foliage; moreover, the radical leaves are more acuminate, narrower, and less in substance. They are both desirable species, and may be grown from seed freely, each species, so far, at least, as my experience goes, coming true to its individual characteristics.

P. ovatus of Douglas is a fine, vigorous-growing plant, attaining a height of from 3 ft. to 4 ft. The whole of the surface is covered with a very short down, scarcely distinguishable by the eye, but sensibly felt by the touch. The radical leaves are broadly ovate and cordate, dentate at the margin, and supported on long stalks; the cauline leaves are also broad and amplexicaule; the flowers are comparatively small, but produced in densely arranged, cymose masses, exhibiting various shades of colour, from intense ultramarine to deep rosy-purple. The brilliancy of colour, and the rich profusion, as well as the handsome contour of the plant, all unite to give it a special value. I would, however, recommend cultivators to consider it as a biennial, as it usually flowers so vigorously the second year that it makes little or no provision below for the following year's growth. It was found by Douglas at a considerable altitude on the mountains in Columbia—generally most abundant where limestone was met with. This species frequently occurs in cultivation under the name of P. glaucus, but the plant figured in the "Botanical Register" is quite distinct.

P. acuminatus of Douglas, as figured by Dr. Lindley, is extremely handsome and distinct. I have not yet met with it in cultivation. Its stems are ascending, attaining a height of from 12 in. to 18 in. The whole plant is of a delicate, grey, glaucous hue; the radical leaves are ovate, petiolate, and smooth at the margin; the cauline leaves are broad, coriaceous, and amplexicaule; the flowers are produced on very short stalks giving a spiciform appearance to the inflorescence; they are purplish at the mouth of the tube, shading off to a lovely delicate blue towards the outer edge of the corolla; the tube is short, gradually widening from the base. It was found by Douglas growing amidst masses of dry white sand on some of the barren plains in Columbia. When introduced it proved to be exceedingly delicate, and possibly the peculiar conditions as just described not having been observed may have militated seriously against success in its culture.

P. speciosus of Douglas, though referred by Asa Gray to an inferior position as a mere variety of P. glaber of Pursh, I prefer taking as the typical plant under which several so-called species are arranged as mere variations, and amongst which we have some of the very choicest representatives of the genus. Our plant is glabrous in all its parts, and to some little extent glaucous; the lower leaves

are spathulate and lanceolate, perfectly smooth at their margin; the cauline leaves are sessile, narrow, and slightly undulate; the flowers are of a lovely, deep azure blue, arranged in many-flowered cymes, the whole collectively assuming a pyramidal character, and attaining a height of 2 ft. or more. It was one of the earliest of Douglas's additions to the then limited genus, and, as it is amenable to cultivation under any ordinary circumstances, ought to be met with much more frequently than it is. It was discovered by him on the banks of the Spokan River, in North-west America, in 1827.

P. speciosus var. Gordoni differs from the foregoing only in the greater width of the bracts and the stem-clasping character they assume; the flowers also are more laxly arranged, and of a less intense blue; it was found by Mr. Gordon in the valley of the Platte River, on the east side of the Rocky Mountains, luxuriating amongst a *débris* of slaty shale.

P. speciosus var. cyananthus always appeared to me to be a major form of the old P. speciosus, in which the floral bracts are largely developed, in fact, much broader than long, and clasping round the stem to such an extent as almost to appear connate. The flowers are produced in dense, short-stalked, cymose masses, arranged tier over tier to a height of fully 3 ft., as in the original plants raised from seeds sent home by Mr. Burke from the valley of the Platte in the Rocky Mountains. My impression—as it was then grown—is that in this variety the beauty of all the Pentstemons appeared to culminate; but when I say from the same seed originated all sorts of gradations, varying between this variety and our typical species, it will be readily understood that the grounds for establishing specific distinctions are exceedingly weak; unfortunately the plant from which the figure in the "Botanical Magazine" was taken did not seed, but died in the attempt; possibly no other plant of similar character and development has existed in the country.

P. pruinosus of Douglas.—A charming plant, allied to P. speciosus in many respects, but possessing essentially distinctive features. The radical leaves are entire, broadly ovate, of a silvery-grey colour, supported on long, slender petioles; the lower cauline leaves are broad, twisted, and dentate, whereas those that immediately subtend the flowers are smooth-margined; the flowers are scarcely one-third the size of those of P. speciosus, of intensely blue colour, supported on short stalks, thus giving them a true verticillate character. It was found by Douglas at Priest's Rapids, on the Columbia River, and introduced in 1828, but has long since disappeared from cultivation. Unquestionably it is one of those plants that should, however perennial its character in some respects, be always considered as a biennial, and treated accordingly.

P. spectabilis of Thurber.—Leaves ovate, sharply serrated, glaucous grey in colour; the lower cauline leaves are sessile, the upper connate; the tube of the corolla short, of a delicate lavender colour, with wide expanding limb, the upper lip of which is amethyst-blue, the lower lip purple; the three tints combined give a charming appearance to the entire inflorescence, which usually attains a height of between 2 ft. and 3 ft. It was discovered by Mr. Wallace on the San Francisco Mountains, in New Mexico.

P. gentianoides of Don.—In describing this species let it be clearly understood that I do not include under this title those species of scarlet, crimson, and rose-coloured Pentstemons which were originally figured under that name in the "Botanical Register," and also the "Botanical Magazine." No grosser misnomer could have been given, for there is nothing Gentian-like about them, either in habit or colour. The true species to which the Gentian-like title was given by Don is a shrubby plant, with Willow-like leaves, covered over with a short pubescence; the flowers are produced on foliaceous racemes, campanulate in shape, and contracted at the mouth, reminding one of Gentiana Saponaria, which they nearly equal in size. I well remember seeing the plant in full flower against a wall in Comeley Bank Nursery, where it had got to a height of some 10 ft. or more; whether it be in existence in this country now I very much doubt. Should any one be the happy possessor of the old species as herein described, I shall only be too glad to receive a few cuttings. I regret to say I am unable to give any information as to the origin of Don's species, nor, indeed, can I find any authentic description of it.

P. Scouleri of Douglas, although defined by Asa Gray as no more than a variety of Hooker's P. Menziesi, has been so long recognised and cultivated as a distinct species in this country; and in the absence of any knowledge of the true P. Menziesi ever having been in cultivation, I prefer retaining Douglas' old name, given by him in compliment to his friend Dr. Scouler. It is a semi-shrubby plant of very distinct habit, small twiggy growth, the stem covered with narrow, lanceolate, slightly obovate, serrated leaves of a greyish-purple hue. The flowers are large, as compared with the leaves, of a slaty-bluish purple, arranged in short terminal secund racemes; they are not produced in any great abundance, but the whole plant, alike in its dwarf and compact habit of growth, as well as in its flowers, possesses sufficiently distinct charms as to render it well worthy of general cultivation. It was found growing wild at the Kettle Falls in Columbia, by Douglas, as far back as the year 1826, and by him introduced into cultivation. It may be readily increased by cuttings of the young shoots in spring, which strike freely in a little bottom-heat, similar to that used for ordinary bedding plants.

P. crassifolius of Lindley bears in many respects a close relationship to the preceding species. It is of a dwarf, shrubby habit of growth; leaves small, ovate, slightly acuminate, and somewhat fleshy, of a light green colour, with entire margins. The flowers are funnel-shaped as to the tube, the limb distinctly bilabiate and wide expanded; in the lower lips the lateral lobes slightly exceed the central one in length; they are produced in short, terminal, secund racemes, and are of a charming, light lavender colour. It is a native of Columbia, and resulted from the same botanical expedition as did the preceding species. It is at the present time rare in cultivation, but is a most desirable plant, and admirably adapted for a dry knoll of the rockery well exposed to the sun, and erected on the basis of a good deep mass of bog soil or peat, from which, while the location of the plant is dry, the roots may find an abundant store of moisture.

P. Hartwegi of Bentham is to the present day more generally known as P. gentianoides, but, as I have before said, this is a misnomer in every sense of the word, and well has Mr. Bentham recognised the good work done by Hartweg in his Mexican explorations by associating with his name this charming species. Not only was the old species valuable as one of our very best autumn-flowering border plants, but in its progeny called into existence by the skill of the florist, we have not only endless variety of colour, but increased size of bloom, the old, narrow, tubular flower acquiring the dimensions almost of a Foxglove. To give a description of a plant so well known and so generally cultivated, if not absolutely in its original typical character, at least in some of its improved and modified forms, would be absurd; I will therefore close my remarks on this species by stating that it was recorded as found by Humboldt and Bonpland, growing on lofty mountains in Mexico at an altitude of nearly 11,000 ft., about the beginning of this century, but was not introduced into cultivation till 1828.

P. Murrayanus of Hooker was one of Mr. Drummond's introductions from San Felipe, in Texas, where he discovered it in 1834. It is a plant of somewhat straggling habit, glaucous, entire leaves, the radical ones broadly ovate and stalked, the cauline one broader and amplexicaule, acquiring in their bract-like form a connate character. The flowers are produced in pairs, the tube of the corolla rose-coloured, and the limb, which is expanded at right angles with the tube, is a singular and effective combination of rose shading off to vermilion. This plant, when well and vigorously grown, is simply lovely, but, like the equally lovely Lisianthus Russellianus, it appears to require very peculiar culture; and hence, though we occasionally meet with the plant, it is exceedingly rare that we find justice done to it. It is not sufficiently hardy for our borders, but will amply repay all the trouble connected with its culture as a pot plant.

P. centranthifolius of Bentham is closely allied to the preceding species; the radical leaves are equally glaucous and entire, but somewhat narrower, those of the stem also narrower, slightly amplexicaule (not connate), and widely distributed along the straggling stems, which attain a height of from 2 ft. to 3 ft. The flowers are generally in pairs, or sometimes in threes, supported on moderately-long pedicels, rising from the axils of the foliaceous bracts; they are distinctly tubular, the limb expanding in a rotate fashion into five almost equal segments; the throat narrow; both the tube and the limb are of a bright scarlet colour. It is a very showy plant, but would be much improved in its cultural habit by a carefully selective system of seeding and breeding. This I think quite possible, as amongst a set of seedlings I have noticed a considerable diversity of habit, but have never myself been successful in maturing perfect seed. It is a native of the Rocky Mountains, South Carolina, and California.

P. Wrighti of Hooker, radical, leaves glaucous, almost deltoid in shape, margin entire, the cauline ones broadly ovate and amplexicaule, diminishing upwards, and widely separated from one another; the flowers produced usually in threes, the tube short, scarcely exceeding in length the wide expansion of the limb. In colour they are of a deep rosy crimson. This is undoubtedly a very handsome species, introduced in 1851, seeds being sent home by Dr. Wright, who accompanied a surveying party (the first, we believe, that went out) to prepare the way in the wilderness for the

now-established Great Inter-Oceanic Railway. It was found by him in Western Texas and the Arizona district. Though scarcely hardy in our northern counties, and exceedingly impatient of moisture, during its resting season, I have no doubt it will thrive in the southern counties of both England, Ireland, and Scotland, and ought to be more cultivated than it is. Dr. Wright's Pentstemon is decidedly of more vigorous constitution than either of the preceding closely-allied species.

P. barbatus of Nuttall.—Whether the old genus Chelone, under which this species has long been classed, is, as represented by such species as C. obliqua, C. glabra, &c., a good and distinct genus, is doubted by some. I am decidedly in favour of recognising its distinctive character, both structurally and in its general habit of growth, but certainly the Bearded Pentstemon does not belong to it, and has rightly been referred by Asa Gray to our present genus. It possesses a peculiarity we have before met with in P. procerus of developing surculi or underground stems all round the parent, thus forming a readily divisible tuft or patch, from which arise several graceful stems, almost devoid of foliage, to a height of 3 ft. or more. The flowers are numerous, supported on pedicels of varying length, springing from the axils of the bracts; they are of a rosy-scarlet, diminishing in brightness in the lower part of the tube. The corolla is gaping and is marked bilabiate, the lobes of the lower lip are deflexed, and are distinctly bearded. Were its flower-stems capable of standing without a stake, it would enhance its value much, but it is well worthy of any little trouble that may be required in this process. The flowers are produced in succession, hence its beauty is retained for a considerable time. There is a white variety of this which I have not seen in cultivation for a long time.

P. barbatus var. Torreyi is a form of more gigantic growth than the preceding. Flowers, a more brilliant scarlet, and the mouth of the corolla, especially as to the lower lip, scarcely bearded, and frequently altogether glabrous. This is a noble variation, if not, indeed, a distinct species. Both the species and variety are in pretty general cultivation.

P. cordifolius.—A semi-shrubby, and, indeed, semi-scandent plant, whose leaves are small, broadly cordate, coriaceous, and sessile serrated as to the margin. The flowers are produced singly from the axils of the leaves; they have short tubes, and wide, gaping mouths, and are borne somewhat pendent and sparsely along the upper portion of the foliaceous stem-growth. So intermingled are the flowers with the ordinary foliage, that there can scarcely be said to be any distinct form of inflorescence. The lobes of the calyx are divided down to the very base—a most unusual thing in the order to which the genus belongs. The tube of the corolla is of an intense deep orange; the upper lip is erect and notched, and the lower is deeply three-lobed. In colour the flower varies from deep orange, with a shade of scarlet in it, to yellow. The peculiar habit of this species, sending up branching stems from below, of free, vigorous growth, and the dense arrangement of the coriaceous leaves, as well as the scarlet flowers, which were said to be produced profusely, all tended to point to the Heart-leaved Pentstemon as not only a novelty, but a great acquisition to the herbaceous border. My own experience is that, though a thoroughly distinct species, constituting a well-marked section of the genus (Erianthera), it has not in cultivation realised the high encomiums passed on it at its first introduction. With us it is not hardy, and I apprehend its full development of growth and scandent character as before alluded to would only result in the full and uninterrupted development of a few years' growth. It was originally found by Hartweg at Santa Ines, in California, and more recently at Cajon Pass by Dr. Bigelow.

P. baccharifolius of Hooker—one of Dr. Wright's discoveries in the expedition before alluded to—a very distinct species, with obovate, dark green leaves; spinescently toothed, showy. Flowers yellowish-crimson, gaping with white blotches at the mouth. A native of Texas, a handsome and distinct species, but of very doubtful hardiness.

In the foregoing enumeration I have confined myself to a description of such species as have been, and most of which are, in cultivation at the present time. I would remind any readers who are interested in the genus that there are as many more authentically described species, some of which excel in beauty even the best of those now in cultivation; and doubtless, as the tide of civilization rolls westward in the great American Continent, new and undescribed species will yet reward the labours of some future botanical investigator.

The Cedars on the Atlas.—The Cedar forest in the Atlas Mountains is most magnificent. I spent a week in a tent in it last year; there is any quantity of Cedars of every age from one year upwards.—C. F. D. L.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Flower Garden and Pleasure Ground.—Biennials and perennials raised from seed sown during the spring must on no account be allowed to stand too close on the beds, for if crowded the whole get drawn up weakly, and a season is so far lost that they flower only meagrely the ensuing spring and summer. In preparing nursery beds for those that do not absolutely require a shaded situation select an open position where they will make close, compact growth, which will enable them to stand the winter and produce double the quantity of flowers that can be obtained from weakly-grown examples. Those that do not like full exposure to the sun, as, for instance, the Primroses and Polyanthuses, should have a place at the north side of a wall, not, as they are often seen, crammed away under the shade of trees that not only darken them too much, but impoverish the soil to an extent that prevents them attaining anything like the necessary strength and vigour. In the herbaceous borders stake and tie everything that requires it before it is broken down by the wind, especially tall-growing subjects like Hollyhocks. These fine plants are often thrust at the extreme back of a border close up to shrubs or trees where there is no possibility of their ever being more than mere shadows of what they would grow to if justice were done to them; in such places the bottom leaves are usually all destroyed by red spider before their flowering is half over. Mulching with 3 in. of rotten manure over the roots will greatly assist them, and a free use of the syringe with clean water twice a week, taking care to moisten the roots as well, will much improve their health and appearance. Remove all dead and decaying tops from plants that have flowered early in order to reduce to a minimum the greatest drawback to herbaceous plants; but for the sake of mere appearance never remove the healthy tops from any plant, or the never-failing result of such treatment will be to weaken it seriously, and perhaps irrecoverably.

Strawberries.—Strawberry runners, in common with most other out-door plants, are very late, but no time should be lost in preparing the ground, so that when they are sufficiently rooted they may be at once planted: the early completion of this work will give them a chance of growing strongly, and maturing their crowns well before winter, and will materially influence their fruit-bearing capabilities for the ensuing year. The fruit is such a general favourite, and success with particular, or, in some cases, all varieties, is so variable on different soils, that I venture to go into detail as to the treatment likely to produce satisfactory results on various descriptions of land. Strawberries succeed best in strong, heavy soils; in such, except the gardens be very old and exhausted, there is seldom much difficulty in obtaining good crops with ordinary attention. It is necessary in all cases to see that the ground is perfectly clear from Couch Grass, or any weeds of a kindred character, as when once the plants are established in the soil there is no opportunity of forking it over sufficiently deep to get out the roots of the weeds, without the successful performance of which operation there is no probability of exterminating them. There is nothing better than early Potatoes wherewith to occupy the ground previously to planting with Strawberries, but any ordinary vegetable crop will answer the purpose. If the ground have not been well manured, spread on the surface 4 in. of well-decomposed manure, dig 12 in. or 15 in. deep, working it evenly down to the bottom. If the soil be of a light sandy or peaty nature, and has been long under cultivation, it will be much benefited by 4 in. or 5 in. of marl or clay being spread over the surface after it is dug, breaking it into pieces, so as to facilitate its being still further disintegrated by the action of the weather; if thus treated, ten days or a fortnight of hot weather will dry it through, after which, as soon as moistened by rain, it will crumble like lime. Then dig over shallow, mixing it with 6 in. of surface soil, tread moderately firm, and plant as soon as the runners are sufficiently rooted and favourable weather occurs. Limited breadths, such as amateurs generally require, may be planted even when the weather is hot and dry, by giving a good watering at the time of planting, and shading afterwards for ten days until the roots have begun to take hold of the new soil. Some Pea-sticks should be put down flat over the bed, to prevent the mats, old blinds, or whatever is used, from resting absolutely upon the plants. After planting keep them well watered until established. The usual method of growing Strawberries, in rows 2 ft. or 2½ ft. apart, is no doubt the best, but in some exceptionally light soils it is next to an impossibility to preserve the plants during dry summers even when mulched; whereas, by growing them in beds at a distance of about 10 in. apart each way, the difficulty may be avoided, the reason obviously being that when planted thus closely the leaves meet so as to cover the ground and shade the roots, which in this plant are so near the surface. I should advise those who have to grow Straw-

berries in very light, unsuitable soil to try this method, but where it is adopted the plants should be got in early; they should not stand more than a couple of years, as they get too crowded to bear fine fruit. The close system of planting scarcely admits of the runners being removed, as if they were placed further apart. If planted early enough to get strong during the autumn, on account of the greater number of plants in a given space of ground, a good crop may be expected the first season after the beds are made. Close planting, as above described, does not admit of the hoe being used much amongst them, consequently it is necessary to resort to hand-weeding. As to varieties, there is no plant in cultivation that is so influenced in its bearing by differences of soil as the Strawberry; it is no uncommon occurrence to see some particular variety succeed in one corner of a single acre of ground, which, if planted on the opposite side, will not thrive at all. But, more generally, a variety that will succeed well in one locality will fail altogether in another. Where early maturity is held in more estimation than large fruit Black Prince may be grown; it succeeds in most places, but the fruit is very small. Keen's Seedling is a very old and well-known, free-growing, and free-bearing kind, and probably will answer in more localities than any other sort, but it has the disadvantage that after the first picking or so what follows is small. For all early properties there is nothing to surpass President (Green), fruit very large, handsome, and of good quality; and the plant is also a free grower. Sir Joseph Paxton and Sir C. Napier both grow freely and bear abundantly; fruit large and handsome. Where it will grow, no Strawberry equals British Queen, the fruit is large and unequalled in quality; it comes in after the above-mentioned kinds. For late bearing, Eleanor is an excellent variety, large, and usually yields a plentiful supply. The three varieties that I would name for amateurs to cultivate are—President, British Queen, and Eleanor; these will ripen in the order placed. Where British Queen will not succeed, Sir C. Napier may take its place. In Strawberry cultivation there is one frequent cause of failure, viz., allowing the beds to get dried up in hot weather after the crop is gathered, when the plants are for a time exhausted after having matured the fruit; they are thus stagnated until the rains come, which induces growth too late for the crowns to mature sufficiently to enable the plants to bloom in the spring following. In dry seasons the beds should be well soaked as soon as the fruit is gathered.

Sowing Cabbages.—A little Cabbage seed should at once be sown to come in early in the spring. Varieties like Cocoa-nut and Enfield Market may be sown without delay, but those of the Early York type must be delayed for another fortnight, or they will be liable to run to seed in the spring.

Tomatoes on Open Walls.—The naturally vigorous habit of these plants is such that they usually grow too rank if they receive too much moisture at the roots, but in exceedingly dry weather they must be regularly supplied with water or the fruit will neither swell to the requisite size nor will the plants continue growing. Do not allow them to get too much crowded with superabundant shoots or to hang loosely from the wall, or the progress will be slow. If they be kept regularly and evenly trained so that the sun, of which they are so fond, can reach every part, our summers are not too long for the successful cultivation of Tomatoes, particularly in late seasons, and if ever they suffer through inattention they lose time that cannot be regained.

Greenhouses.

These must now be kept gay chiefly by means of soft-wooded plants, and, in order to keep up a constant succession, a good supply of Pelargoniums, Petunias, Celosias, Fuchsias, Achimenes, Balsams, &c., should be provided, and so treated as to have them in various stages of growth and forwardness.

Fuchsias.—Old plants of these that were in bloom early, and which are now past their best, may be made to flower again by stopping the young growth, and setting the plants out in a shady, sheltered position in the open air, where they will soon break afresh, and flower more profusely than before from the exposure and the firm, short-jointed growth which they make. Even the younger plants, after they have attained sufficient size, are frequently benefited by being placed out in the open air, provided always they have a partially shaded and sheltered situation. A lofty hedge or shrubs form even a better protection for plants than walls or buildings, as in the case of a thick hedge or shrubs the wind is sifted, as it were, before it reaches them. Independent of this, too, there is always more moisture deposited by night dews in the immediate vicinity of trees or shrubs than in that of buildings, and this is a great consideration where the health of plants has to be thought of, for with all the syringing or bedewing overhead that may be given, there is nothing like the steady natural deposit that condenses slowly upon them, filling each pore of the leaf to repletion, and thus enabling them to make good the losses caused by rapid evaporation during the day. Afford young growing plants of Fuchsias plenty of atmospheric moisture, moderate shade, and a brisk heat by closing early in the evening after syringing overhead; keep all blooms picked off and the ends of the young shoots nipped out until within a fortnight or three weeks before they are wanted, during which time, by giving them a little more light and air, the growth may be hardened and a free-flowering habit induced. As the pots of most of them will now be filled with roots, they should be kept well supplied with manure-water, which may be given at least twice or thrice a week, especially to those in bloom, the free manner in which Fuchsias flower being a great tax on the plant, and requiring plenty of root-moisture to prevent them from falling prematurely. Remove all seed-pods as they show themselves, or the effect of these will be to stop the growth of the young wood, and consequently cut short the period of flowering, as nothing has a more exhausting effect upon plant life than the production of seed. To get large young plants early next season, a first batch of cuttings should now be put in. Make choice of such growth as appears to have plenty of sap, instead of that which is hard and woody, as the former will not only strike more readily, but will make far the best plants. Place the cuttings singly in small pots, which should then be placed under a hand-light in a shady situation, and kept gently syringed occasionally till they root.

Petunias.—These make excellent pot plants and are very showy, especially the flaked varieties, both single and double. To have them stocky and short-jointed they should be grown out-of-doors, fully exposed to the sun, and be stopped frequently to induce them to break back freely, and form bushy plants. When grown under glass the stems become drawn, which they likewise do in the greenhouse while producing their blooms. To obviate this as much as possible they should be placed in light, airy positions, where they only get a small amount of shade, if any at all. By cutting back any that have become straggling and drawn, and replacing them out in the open air, they soon break again, and flower with great freedom, so that a constant supply may be kept up by growing a few plants and treating them in this way. While out-of-doors the pots should be plunged so as to prevent the sun from drying the roots.

Celosias.—The brilliant and feathery plumes of these and the length of time during which they may be had in bloom render them very desirable plants to cultivate either for the purpose of supplying cut flowers, or for greenhouse or conservatory decoration, where for effect they have no equal among soft-wooded plants. Unfortunately, they are very subject to red spider; and, unless kept well syringed while growing, and freely supplied with water at all times, they become so much injured as to lose their foliage entirely long before the flowers become shabby. Valuable as they are for summer, they are even more so for winter work, and it is not yet too late to sow for that purpose, although they will not attain so large a size as they would have done had they been sown in May or June. The seeds soon germinate if sown and placed in a shady position in the stove, or where they can be kept under a bell-glass or hand-light to prevent the soil drying, which, unless protected, it soon does at this season. When the young plants are up, pot them in light rich soil, and shift them on as they progress till they are in 6-in. or 8-in. pots, which are quite large enough for any that may be grown after this season. Till the end of August or middle of September no place will suit them better than a close pit or frame, where they can be plunged in leaves, or something of that kind, syringing freely overhead both morning and evening to prevent red spider.

Double Zinnias.—There is generally a paucity of gay blooming plants late in the autumn; and although Zinnias are not generally cultivated in pots, they are most valuable for that purpose, their gay colours and fine large globular flowers making quite a display indoors long after they cease blooming in open beds, where damp nights and heavy rains generally cut short their beauty. Any left over from planting should have their flower-buds nipped out and be potted up at once, after which set them in the shade for a few days till they get hold of the soil and then out in an open situation. A few seeds sown now will not be too late, as they grow rapidly at this season and soon come into bloom.

Perpetual or Tree Carnations.—These useful winter-blooming plants must now have great attention paid them in order to get them strong and well established. Spring-struck cuttings ought by this time to be sufficiently forward to be transferred to their flowering-pots, which in no case need be larger than 6 in. for the first year, as these, with good soil and liberal feeding, are amply sufficient to grow them to perfection. A good fibry, yellow loam suits them best, and to this should be added a little sharp clean sand to keep it open and porous. What assistance they require by way of stimulants

is best given later on after they have filled their pots with roots and begin to show flower, when a little clear liquid manure will be of the greatest assistance to them. Before using the soil for the purpose of potting search it well over to see if there be any wireworm lurking therein, as these are most destructive to Carnations, into the pith of which they eat their way, soon causing the plant to perish. As an extra precaution mix a little soot with the soil and place some over the crocks, which will render the plants tolerably safe as regards wireworm, and at the same time impart a healthy appearance to the leaves. When potted set them in an open position where they can have full exposure to the sun, from which the pots should be shaded by being plunged in coal ashes or other available material. The health of the plants will be greatly improved by damping them overhead every evening, but not while the sun is shining hotly upon them.

Pelargoniums, of both show and fancy kinds, turned out to ripen, should have water occasionally in order to make the dying off gradual, and not so rapid, as is too frequently the case. Cuttings always strike best if taken off soon after the plants have ceased blooming, and before they have stood long out-of-doors, as then the leaves are fresher, a state in which they greatly aid the formation of roots. Fancy varieties, after becoming hard and woody, which they soon do when exposed, afford but very poor cuttings. The best way is, therefore, to take the cuttings immediately the plants have done blooming, while the young wood is fresh and the leaves green, as then they may be struck with certainty. An old half-spent hot-bed forms a suitable place in which to strike them, if provided with a sufficient depth of sandy soil made firm, and kept moderately moist; where that is not available, a cold pit or a few hand-lights placed in a shady situation will answer the purpose. There they should be occasionally syringed in order to keep them fresh and plump, but this should not be carried to excess, or many of them will damp off.

Lachenalias.—These are among the most valuable of early spring-flowering bulbs, although they rarely receive the attention which they deserve. This is more or less the case with most bulbous-rooted plants, as they lose interest immediately after flowering, and get stowed away just at a time when they require the greatest care. To give them a fair start, the bulbs should at once be shaken out from the soil in which they were grown last year, and be re-potted in fresh material. This should consist principally of fibry loam rather stiff than otherwise; and, in potting, press it firmly around the bulbs, just leaving their tips protruding above the soil. If this be tolerably moist they will not require water till they begin to grow, and even then it must be given them with caution, and only occasionally, as bulbous plants need very little till they get well into leaf, which in their case will not occur till the turn of the year. A cold pit or frame is the best situation in which to place them till winter sets in, when they should be set on light airy shelves in the greenhouse.

Stoves.

The warm, sunny weather which we are now experiencing will necessitate a free use of the syringe both morning and evening, and care should be taken to apply it in such a way as to wet both the under and upper sides of the leaves. In order to counteract the drying effects of the large body of air that has to be admitted to keep the temperature within due bounds, the floors and the under part of the stages should be kept well watered as often as occasion requires. The principal stove plants now requiring special attention are those in course of preparation for winter blooming, such as Pentas carnea, P. rosea, Goldfussias, Poinsettias, Sericographis, Thyrsacanthus, Plumbago rosea, Eranthemums, Rivinas, Begonias, and the beautiful Euphorbia jacquiniæflora. These should all be potted on and kept in a moist growing temperature near the glass to prevent them from becoming drawn. Most of the above do best at this season plunged in leaves or tan in pits or frames, as there they can be kept separately, and treated according to their several requirements. Most stove plants will be benefited by slight shade for a few hours during the heat of the day, the exceptions being the Begonias and Poinsettias; the latter, indeed, should be kept close up to the glass and should have plenty of air, otherwise they soon become drawn and do not produce such fine bracts as when the shoots are short-jointed and stocky. Few stove plants are more subject to red spider than these are, and therefore the greatest care will be necessary to keep them free from their attacks, for if once they effect a lodgment it is no easy matter to stop them from spreading. One of the chief causes of red spider attacking plants is dryness at the root, and should this be accompanied by unfavourable atmospheric conditions they are sure not to escape. While growing rapidly, as Poinsettias now are, they will absorb water freely, and should never be allowed to suffer from want of it. The air of the house or pit in which they are placed should also be kept charged with moisture and the syringe freely plied amongst them both morning and evening.—J. SHEPPARD, *Woolverstone Park.*

Orchids.

Orchid-houses, it need scarcely be stated, should be kept thoroughly clean, and in good repair, and in order to do this effectually, each of them should be washed inside and out—wood-work, glass, stages and all—once a year, and at the same time any requisite repairs should be executed. In this way the structures themselves may be kept in good condition at a moderate cost, and the eggs of the insects and the germs of fungi removed, whereas if a house be allowed to get thoroughly out of order before it is taken in hand, the cost of repairing it will probably be as much as that required to build a new one. The present is the best time to put Orchid-houses in good condition, as while the outside temperature is so high the plants will not suffer from exposure, and the moisture accumulated through the quantity of water spilt in washing will have disappeared before cold weather has set in. Where any house is painted it should afterwards be left empty and well ventilated for at least a week before the Orchids are replaced, as fresh paint is highly injurious to them, and even after they are put back the ventilation should be carefully looked after. If the stages be covered with shell-gravel, or anything of that kind, it should be removed before washing the house, and fresh material should afterwards be put in its place; the same should also be done with reference to the earth underneath the stages, a portion of the surface should be removed and replaced by fresh gravel or ballast. In preparing for cleaning the first thing required is to empty one of the houses (provided there be more than one) and to go over the plants, putting those that are not growing in an extemporized Orchid-house, where they may be kept rather dry, and in this way they will be benefited by having their pseudo-bulbs well ripened; if enough to fill the house be not obtained in a resting condition, the remaining plants should again be gone over, and a sufficient number of the strong-growing kinds selected and placed by themselves in the end of the house in question, where they can be shaded and treated according to their requirements. The plants left in the Orchid-house in which it is intended to commence operations should then be placed with the growing plants in the other houses. The cleaning should immediately be proceeded with while the house is damp, and too much ventilation should not be given until the washing is finished, when the plants from the second house may be removed into it, and so on until all are thoroughly cleansed. In any house that it may be necessary to paint after the washing is done, all the ventilators should be opened to dry it thoroughly before the painting is begun. Those who have only one Orchid-house even, should annually clean and repair it; close up the plants one half of it, leaving the other half empty, and placing a partition of double mats, sewn together with string, between the occupied and the unoccupied parts of the house. In this way one-half at a time can be cleaned, and when the first half is ready the plants can be moved into it, and the other half proceeded with in the same way, but the quicker and more carefully the work is done the better. JAMES O'BRIEN.

Roses.

Pot Roses should not be neglected; at present, while the weather is so dry, even out-of-doors they will require watering twice a day at least, and if not plunged, some old leaf-manure or tan should be placed around the pots, burying them up to their rims. My plan in dry seasons like the present is to place them in beds, each containing four rows of pots, arranged so that the tallest plants face the north and the dwarfer ones the south; they occupy a good bed of ashes, and the pots are surrounded with old Mushroom manure, leaf-mould, and sometimes Cocoa-nut fibre. These I find keep the roots cool and moist, and the plants do not require so much water as to wash all nourishment out of the soil. Encourage wood growth by removing all flowers and thin out all useless shoots. Mildew and green fly are troublesome this season, and therefore the syringe will be often required; failures often arise from inattention during the hot summer months. When plants have been forced it is too often the practice to let them take care of themselves, all they get being an occasional watering until they are required again. Sometimes they have strength enough to break and produce good flowers, but, on the other hand, they often fail. If the flowers be kept well picked off and the plants, if in any way neglected, be mulched and watered, there is yet plenty of time to get them into good condition by the autumn. They will not require any manure water after they have made their growth, but they should be freely watered with rain or pond water; see that the drainage is good. If the worms be destructive use a little lime in the water, which will kill them. A knob of caustic lime the size of an egg to four gallons of water is sufficient to kill worms, and will not destroy the plants, but rather improve them.—H. G.

Hardy Fruits.

The dry hot weather which we have now had for some time has ripened all kinds of small fruits quickly and well, and if the gathering of them has not been completed let it be done forthwith, for if the drought continue much longer, the birds will have the largest share of them. We have never before been so much troubled by them, and have reluctantly been compelled to use the gun somewhat frequently. We shall soon also have wasps with which to contend, and precautionary measures should be taken against them by searching for their nests; a small premium offered to labourers for the destruction of each nest found is the most certain way of being freed from them. The great advantage of mulching fruit tree borders will now be apparent in the improved vigour and health of the trees, besides the labour saved in watering, but after such a roasting as they have had, if water can be had and labour to apply it, a good soaking would prove most beneficial, and assist materially the better swelling of the fruit. The superfluous growths of Apples, Apricots, Pears, Plums, and Peaches, may now, without much danger of their making secondary growths, be removed, and the shoots to be retained be finally laid in. If any fresh growths should be made, persistently pinch them in to one or two eyes to induce the formation and swelling of fruit-buds. If the ligatures of grafts that were put on in the spring have not been removed that should be done now, though it will, perhaps, be well to retain a single tie as a safeguard against wind, but it should be sufficiently slack not to interfere with the swelling of the wood; also train the new wood into the desired form, and rub off all shoots produced by the stock. Cuttings of Gooseberries and Currants that were put in during the winter and early spring should be gone over to have all the buds, except three or four at top rubbed off, in order to ensure clean stems to the trees; the points of those left should be pinched out, and the growth will then be more bushy than it otherwise would be. The Gooseberry caterpillar has at length made its appearance, and we are having the branches hand-picked, which is the best remedy. Frequently examine trees, the fruit of which has been thickly netted up for the sake of preservation, as vermin often gain admission, and soon cause irretrievable injury. A week or two ago I was much puzzled to find out what was eating some fine Bigarreau Napoleon Cherries, that had (as I thought) been safely secured against all vermin, it turned out, however, that such was not the case, and as the fruit still disappeared search was made among the branches (an old tree against a wall), when, much to my relief and satisfaction, the delinquent was discovered in the form of a sleek specimen of the dormouse, which had apparently taken up permanent quarters in the tree. Apricots are now ripening, and to these squirrels are very partial; the moment they are eatable it will, therefore, be well to effectually protect them in time.—W. WILDSMITH, *Heckfield.*

Poisoning by Virginian Creeper.—On June 22nd, two little girls, aged respectively five years and two years and a half, chewed the leaves of the common Virginian Creeper. They do not appear to have swallowed any, but only the juice. The masticated leaf they spat out. Very shortly after taking the leaves, about 5 p.m. on the same day, they were both seized with violent vomiting and purging, with considerable tenesmus, but not a fragment of leaf was visible. Immediately afterwards they became collapsed, very pale, skin cold and sweating, and the pulse hardly to be felt. They remained apparently in a deep sleep for about a couple of hours, when they were roused by a return of the vomiting and purging. They were then given large quantities of milk with some rum, after which they revived. Neither of the children had any sign of convulsions. When I saw them about nine the same evening, they were recovered to a great extent. Both were very pale, the younger still very prostrate. The skin was rather cold, and there was marked dilatation of the pupils. Pulses of both 120, and very thready. There is no doubt about what the children had taken, because on recovery the father took the elder child into the garden, and she showed him the Creeper, portions of which they had been chewing. I do not remember to have heard or read of poisoning from this common plant; but it is evident that a very small quantity of its juice has powerful irritant effects, and produces very dangerous symptoms. It would be interesting to know whether there are any other cases on record, and what have been the results. As regards the treatment, nothing could have answered better than the milk which the father gave, and I only followed it up with a good dose of castor oil, and the next day the children were quite well.—HERBERT L. BERNAYS, Chatham, in the "Lancet."

Fine specimen of Pinus Pinsapo.—At Laveston House, Sherborne, I saw the other day a cone-shaped specimen of this beautiful Conifer, upwards of 50 ft. in height, and quite 90 ft. in circumference at the base.—S.

THE KITCHEN GARDEN.

PEAS AND THEIR CULTURE.

FEW vegetables have become more improved of late years than the Pea, both as regards varieties, quality, earliness, and productiveness. There are now so many good kinds, both early and late, and so many different modes of culture, that it is almost an impossibility to fix upon any particular selection, or say what system of culture we shall adopt. Most cultivators have, in Pea-growing, as in other things, a system of their own. Years ago Peas were sown early in November and December, now that is seldom done. When sowing in November was in fashion, there were only comparatively a few varieties in existence, and these differed little from our present field sorts. We now propose to offer a few remarks on Pea culture in general, and also on the varieties most suitable for garden purposes.

Early Peas.

Where the first crops of Peas, owing to want of convenience, are obliged to be grown out-of-doors without protection, the warmest and most sheltered situation that can be got should be assigned to them. A Peach border, facing the south, is generally chosen for them; if, however, an old wooden frame can be spared for them, having a temporary covering in severe weather, they may be gathered a few days earlier than they otherwise would be. Where choice and expensive sorts are grown, it is not advisable to sow them out-of-doors, they being liable to many enemies; indeed, it is best to start all early Peas in heat, harden them off, and then transplant them to the open ground. For this purpose nothing is better than turves cut 18 in. in length, and 6 in. in width, and 1½ in. thick. These should be placed on shelves or borders in early Peach-houses, Vineries, &c., and the Peas should be pricked into them in rows. A turf, 6 in. wide, will take three rows across; and if the turf be 18 in. long it will take eight rows, thus making a total of twenty-four Peas in each turf. Where, however, turves are not procurable, long boxes may be used with success. They should be made 6 in. deep, and 4 in. wide at the top, and 8 in. at the bottom. The bottom should be secured to the sides by means of small hooks, so that when planting time arrives they may be easily removed to admit of the whole bulk of soil slipping out into the trench; but a better plan still is to have bottom, sides, and ends, so that they may be taken to pieces, as otherwise sometimes the soil adheres to the sides, and occasions the breaking of the ball. Pots are sometimes used, but they are much more troublesome than boxes or turf, and do not answer the purpose nearly so well. Where boxes are used they should have some rough soil placed over the bottom (which should be perforated), and then filled to within an inch of the brim with good loam, the Peas being pricked in, as recommended in the case of turves; they should then be kept moderately moist. When they are up they must be placed as close to the Grass as possible, in order to insure sturdy growth, gradually hardening them off as they advance in cold frames, and giving them plenty of air until the weather is sufficiently favourable for transplanting them out-of-doors. If sown the first week in January, they will be quite forward enough for planting out, and be better than if they were sown earlier. The planting should, if possible, be done in dry weather, as then the soil will work so much better than when it is wet; it is better to defer planting for a day or two than get on the ground whilst it is saturated with water. The trenches to receive the plants should be sufficiently deep to admit of the balls or turves being sunk 2 in. or 3 in. below the surface of the surrounding soil. As soon as planted, they should be earthed up, and a few sprays of Gorse, or branches of Firs or Laurels may be placed on the northern side of them, in order to afford a little protection, but they should not be so thick as to cause them to draw up weakly. A thin coat of coal ashes spread along each side of the rows, too, will help to prevent the attacks of slugs and snails. The distance at which the rows should be apart will depend upon the varieties grown; if dwarf kinds, 2½ ft. will be a good distance, but if taller kinds, another 6 in. may be allowed. It is not advisable in the case of early Peas to plant too many varieties at a time, unless a large space is to be

occupied with them; for a dish consisting wholly of one sort is always more satisfactory than a mixed one arising through not having enough of any one kind to insure a good picking. The best early Pea at present in cultivation is undoubtedly William the First; it is not quite so early as First Crop or Ringleader, but its quality and productiveness compared with these varieties more than compensates for its being a day or two later. Still where very early Peas are in request, it is well to grow one of these sorts, in order to have a picking as early as possible. Ringleader and First Crop are the earliest, and no doubt possess certain advantages over the other varieties; for instance, they stand the frost better than many others. Mr. Gilbert, of Burghley, writing of early Peas, says:—"I had sown on November 17, William the First, Sangster's No. 1, Sangster's Improved, and Racehorse; the three last-named varieties only appeared here and there, but William the First was full in row, and of a dark green colour. I can highly recommend the Pea to my gardening friends." Blue Peter, Multum in Parvo, First Crop Blue, Little Gem, Kentish Invicta, and Emerald Gem are all excellent early varieties, and are well spoken of by the gardening public; but if only one variety of early Pea be wanted, that should be William the First. It is one of the earliest, if not the earliest, of Marrow type; it is of excellent flavour, and an abundant cropper; the next best is, perhaps, Blue Peter or First Crop Blue.

Main Crops.

There are various ways of obtaining successional crops of Peas all through the summer months. Many prefer to plant a large plot of ground with a number of varieties that will naturally succeed each other; others select a few good sorts, and sow them at intervals of three or four weeks, as the case may be—a good plan in some cases, but inasmuch as a number of excellent kinds may now be had to follow each other, naturally we would recommend that plan. The principal sowings will require to be made in March, April, and May, and if the plan of successional sowings be practised, the intervals between each must depend upon the varieties grown, as some come into bearing much sooner than others. Many make it a rule to sow as soon as the produce of the previous sowing appears above ground, but this rule should not be made absolute, for, if the weather be favourable, one sowing should not be made so close on the heels of the other. If sorts be employed that do not naturally form a succession, sowings must be made at intervals of a fortnight or three weeks, according to circumstances. Much depends upon the time of year at which they are sown; for instance, Peas put in in the end of May would naturally take less time to come into use than those sown in February or March. The best way to insure a regular supply is to note from time to time how long each variety is coming into bearing, calculating from the time of sowing, and making allowance for the season at which it is sown. As regards sowing, many sow deep, others not; and trenches have of late even been used for Peas. These are doubtless in many instances advantageous, but, as a rule, we prefer drawing wide drills to a depth of 3 in. or 4 in. Mr. F. R. Elliott, who has been trying some experiments in order to ascertain the best depth at which to sow Peas, says:—Buried 2 in., they came up soon, but did not last long; at 3 in. and 4 in. deep they came up three or four days later, did not bear quite so early, but yielded a heavier crop, and continued in bearing much longer; at 5 in. and 6 in. deep they came up two or three days later, still grew about as vigorously as the others, and continued in bearing still longer; at 8 in. and 10 in. deep they were still longer making their appearance, but did not produce nearly so well as those in shallower drills. A few straggling, feeble plants came up when the seeds were put 1 ft. deep. It will be seen, therefore, that the best and most profitable depth at which to sow Peas is about 5 in. or 6 in., except in heavy soils, in which they should not be sown quite so deeply. The best distance apart at which to plant main or succession crops must, as in other cases, be governed by the varieties grown. If the kinds be tall, at least 6 ft. between the rows should be allowed, but dwarf kinds may be sown a little closer. Nothing is gained by overcrowding, as by so doing both light and air are, to some extent, excluded, causing the haulm to assume a feeble, weakly habit. Some sow Peas broadcast in the rows, others place each Pea separately in the drill, a good practice when time can be spared for such work, as they come up more regularly, and afterwards grow more evenly. Mr. Pragnell, of Sherborne Castle, who is well known to be an excellent Pea grower, draws his drills to a depth of 3 in. or 4 in., and about 6 in. or 8 in. in width; he then fills them in with some rather light sandy soil of a yellow colour, previously sifted through a rather fine sieve; this done he levels the soil with the back of the spade; the Peas are then pricked in. In each drill there are three rows about 2 in. apart, the distance from Pea to Pea in the rows being rather more than 2 in. For measuring the distance he has a small round bar of iron or wood, in which there are three teeth, about 2½ in. long, placed at the proper distance apart, and a handle attached to the top. The teeth are made large enough to make a hole capable of easily admitting a Pea, and they are also made with a blunt point so that the Pea will drop to the bottom of the hole. Of course this is a mode of sowing which consumes much time, but it is not wasted, for the crop amply repays the labour thus bestowed upon it. The Peas come up all together, and regularly in the row. Mr. Pragnell, too, never allows a Pea to be put in the ground about the growth of which he has any doubts; the small and inferior ones are all picked out and cast aside. When the sowing is over Pea wires are placed over the rows, where they remain until the height of the Peas necessitates their removal. Many sow in single rows, allowing a distance of 4 in. or 5 in. between each plant, but this is only done for exhibition purposes. Many sow tall Peas here and there in short rows at long distances apart, and plant other crops between them, but this is a plan which we cannot recommend.

Varieties for Main Crops.

Tall varieties of Peas are no longer necessary, inasmuch as we have now many excellent dwarf kinds; but where there is plenty of ground, and sticks at disposal, some of the taller varieties may be grown with advantage, as they generally continue in bearing longer than the dwarf kinds. In small gardens the latter are however best, as they do not shade other crops. In making selections of Peas the locality in which they are to be grown must not be lost sight of. Many kinds succeed admirably in some places, whilst in others they will not thrive at all satisfactorily. Veitch's Perfection, for example, when well grown, as we have frequently seen it, is one of the very best Peas, both in quality and productiveness, but in some localities we have often known it to fail. Mr. Gilbert says Veitch's Perfection is good only in some people's hands. With me it has failed for the past seventeen years; therefore, in selecting Peas, we must get kinds most likely to succeed in the locality in which we reside, and this can only be discovered by trying new varieties in a small way, and selecting those that are found to be most suitable. The best kinds for main crops are G. F. Wilson, James' Prolific, and William the First. These are unsurpassed; they grow to a height of from 3 ft. to 4 ft., are heavy croppers, and are in every way excellent. Commander-in-Chief, Giant Emerald, Marrow, Duke and Duchess of Edinburgh, Ne Plus Ultra, and Champion of England, are also excellent, but they grow much higher than those just named; where, however, height is no object, these varieties are decidedly the best of their class. Laxton's Supreme is largely grown in many places, and where productiveness is the chief aim it is well worth attention; the pods are large and well filled, but the Peas are deficient in flavour. Excelsior Marrow is likewise a good Pea, as is also McLean's Advancer; but after carefully testing the merits and demerits of numerous varieties, we have come to the conclusion that, though there may probably be others as good, yet, taking all points into consideration, there are certainly none better than those we have just mentioned. New kinds are continually appearing in seed lists; but a good rule is never to exchange well-known, tried varieties for new comers, until we are sure that the latter are worthy of a permanent place in our collections.

Late Peas.

In many places, if not in all, the long continuance of the Pea season is a matter of no small importance, late Peas often being quite as much prized as early ones, and by selecting

suitable sorts and adopting a liberal mode of cultivation they may be obtained of good quality late in autumn, provided the weather is tolerably genial. Upon the latter much depends, but a good deal also upon the treatment which they receive. No one can successfully grow late Peas unless they manure liberally and water freely. To have Peas in July and August is comparatively easy, but to have them late in October is a different matter; in that case they require higher cultivation than earlier varieties, in order to obviate the attacks of that greatest of all enemies to late Pea crops—mildew. As regards sowing, the method employed in the case of main crops is, to some extent, applicable to late crops, but the latter should, if possible, have more room allowed them both in the drill and between the rows, so as to give them all the light and air possible—agencies indispensable in growing late Peas successfully. Sowing in trenches is often practised where the soil is naturally of a dry, hungry character, and it is a system with which we quite agree, as by it the roots can be much more readily soaked with water, should that become necessary, which is generally the case in even ordinary dry summers. Where this system is adopted the best way is to open trenches 2 ft. wide and 18 in. or 20 in. deep, according to the depth of the soil; part of that taken out should then be mixed with good rotten manure, that from piggeries and earth-closets being often used; but, as a rule, nothing is better than good rotten manure from the stables. Cow manure is also excellent, and where it can be readily obtained it should be used along with that from the stables. The trench should then be filled up to within 5 in. or 6 in. of the surface, and the Peas should be sown in double rows along the trench, inserting them as near as possible at equal distances apart; from 4 in. to 5 in. is a good distance for late Peas. Under such circumstances they grow stronger, and continue much longer in bearing than when planted more closely. They should then be covered to a depth of 3 in. or 4 in., leaving the surface of the trench 2 in. or 3 in. below the level of the surrounding soil; this will be quite sufficient to retain water, and deeper trenches only lessen the depth of soil available for the roots. The manure should be thoroughly incorporated with the soil in the bottom of the trenches, an important matter, inasmuch as it encourages the roots to descend beyond the influence of heat and drought, and in this way obviate the attacks of mildew. The time of sowing depends greatly on the varieties grown, but all late Peas are generally sown from June to the end of July, and sometimes a few dishes may be obtained in the end of November and beginning of December (if the weather be favourable) by sowing early in August. Where this is done, a light, sunny situation is essential, and if in any way protected from the fierce, stormy winds that often blow at that time from the north, so much the better.

Varieties of Late Peas.

Although some new and valuable varieties have been lately added to collections of late Peas, we do not think that any of our well-tried standard kinds should be discarded to make way for them. Dwarf Peas, as a rule, are seldom sown for late crops, as they do not continue in bearing so long as the taller ones. Our greatest favourite is Ne Plus Ultra, and when only one variety is required to be grown, that Pea should be selected. It is a tall grower, and requires to be well staked, but it amply repays that trouble. It is a good cropper, a continuous bearer, and, as regards flavour, unsurpassed. British Queen, Knight's tall Green Marrows, Williams' Emperor of the Marrows, Champion of England, and Victoria Marrow, rank among the best of old varieties, whilst Sutton's Giant Emerald Marrow, James' Prolific, Fillbasket, G. F. Wilson, and Laxton's Omega, are the best amongst new kinds, and useful for earlier gatherings, but for the latest crops the former are decidedly the best. We have known many sow early Peas for the last crops, but they invariably fail to produce enough to repay the trouble involved in their culture; here, however, they will succeed. William the First is best for the purpose, and it may be sown two or three weeks later. In order to retard in some measure the last sowings, the points of the shoots may be nipped out as soon as the first blooms show themselves; this will induce them to become bushy, and will delay their cropping a fortnight or three weeks, without in any way impairing the amount of produce. If a few Peas be required for purposes of exhibition, Laxton's Superlative and Supplanter are, perhaps, two of the best varieties, having very large pods, covered with a beautiful bloom; for general purposes they are, however, comparatively useless.

Sticking Peas.

Various modes of sticking are practised in different parts of the country, but none of them beats Pea-sticks, made of tops of trees or underwood; Hornbeam is perhaps as good as any when it can be obtained; Hazel and Ash, too, are often used, and answer the purpose admirably. In preparing the sticks they should be made flat or fan-shaped, just taking off the straggling shoots at the top, in order to give them a neater appearance; little time need be spent in sharpening, one usual cut made in a slanting direction being all that is needed; a little judgment must, of course, be used in cutting them to the required length for each variety, too short sticks being comparatively worthless; care, too, should be taken to place them wide enough apart at the bottom and upright, *i.e.*, not sloping inwards at the top as is usually the case, allowing the haulm to escape at the sides, instead of finding its way to the top inside the sticks. In the case of very tall Peas it is a good plan to put a short stick and a long one alternately on each side of the row; when, however, sticks cannot be had readily a few stout poles or stakes driven firmly into the ground, 5 ft. or 6 ft. apart on each side of the rows will answer. These should be all of one height, which should be that of the Peas; some tar twine or other strong cord should then be tied to the end stake and passed along the line, making a turn on each stake within a few inches of the ground, and as growth progresses the next turn should be raised a little higher up and so on, until the plants have attained their full height. If the string or cord be applied at the right time, the tendrils of the Peas will clasp firmly round both stakes and strings, and will support the plants almost equal to Pea-sticks; some, indeed, think this plan best, as by it the plants are exposed to more light and air than they otherwise would be, and the pods are more easily picked without injuring the haulm. Light galvanised wire hurdles are likewise used in some places for supporting Peas, and they are not without merit, inasmuch as they are neat, are speedily applied, and last long. Market gardeners seldom stick their Peas; they allow them to come to maturity, then pick them, and pull them up. They are seldom gone over more than once or twice, and for market purposes this answers very well, but where a continuous supply is desired sticks are decidedly needed. When they are not employed, stopping the points of the shoots is often practised to induce the plants to grow more dwarf and bushy, which in this case is no doubt advantageous, but, as a rule, little is gained by stopping. It is said by some to throw the energy of the plants into the pods, but it is a question if it be not as harmful as beneficial. Where a crop of Peas is required to be fit for use on a given date, and where, from all appearance it is not likely to be ready by that particular time, we have frequently seen the tops of the shoots removed, and only the most forward of the pods left. The moulding up of Peas after they have been sticked is generally done with a spade; a line is stretched along the side of the row, in order to make straight work, and the soil is then carefully placed round the bases of the plants. Too much soil should not, however, be put around the stems of Peas, as the roots push from the stems with considerable reluctance, and the earthing up throws off the water instead of allowing it to descend to the roots.

Mulching and Watering.

Mulching with various materials is an excellent practice, and one which deserves more attention than it generally receives, as the benefits to be derived from such treatment are very great. The mulching keeps the roots cool and moist, and is especially useful in shallow soils; in clayey lands, too, which break into large fissures during the drought, mulchings enable rains, when they come, to thoroughly soak the whole of the soil instead of running down the cracks, thus leaving the chief portion of the roots dry, and inducing mildew. The best mulching material depends greatly upon local circumstances; where, for example, Sea-weed can be readily obtained it makes a good covering, inasmuch as it retains moisture for a great

length of time. Where, however, this cannot be got, half-rotted manure, such as that from old linings or, better still, that from Vine borders, makes perhaps the next best mulch. We have likewise frequently seen flags of the Yellow Iris (I. Pseudacôrus) cut from the river-side and used for the purpose, and lawn mowings may also be employed where nothing better can be had, but they are apt to fill the ground with weeds. Before mulching, should rain not come, a thorough watering should be given, first pricking the surface over with a fork in order to allow the water to peretrate it readily, after which put on a good coating of the best material at hand, covering as much of the soil as possible, and if 6 in. or 8 in. thick all the better. If this be done properly, and a good watering given once a week, or as often as seems necessary, the plants will never sustain any sudden check through excessive drought. A good dose of manure water or guano water given sometimes will greatly improve the crop. Watering, be it observed, should be done thoroughly; far better to water half the crop at a time and do it well than only half do the whole. Pouring water close to the stems of the plants is a practice which is best avoided, as it sometimes causes them to rot. In very dry weather a sprinkle overhead in the evening will be found to be beneficial to the foliage, and also to assist the setting of the blooms.

Soils and Manures.

The most suitable soil for successful Pea culture is a rich friable loam, and where it is found that the soil does not contain a sufficient quantity of calcareous matter, it should be added in the shape of lime, chalk, &c. For early Peas, however, a lighter soil answers better, especially where very early crops are wanted, the object in that case being earliness rather than productiveness; but for main and late crops the soil requires to be of a more tenacious character, and should be deep, so as to admit of the roots running downwards in time of severe drought, otherwise continuous waterings will have to be resorted to, in order to prevent an attack of mildew. Whenever a crop of Peas have been subjected to severe drought, especially if after the blooming has commenced, the pods are never so large and full as if they had been kept continually growing without check from the commencement. It is good practice, where it can be done, to sow Peas on ground that had been occupied by Celery the previous year, as in that case the soil will have been deeply moved, and, if properly treated, will be in good condition for the Peas as regards richness. Mr. Pragnell, to whom reference has already been made, always trenches a piece of ground for his main crop of Celery, giving it at the same time a heavy dressing of manure, lime, or whatever is most needed; the trenches in which the Celery is to be planted receive a good coating of manure prepared in the autumn, consisting of horse-droppings, cow manure, soot, salt, and lime. When the Peas are sown the following season, care is taken to have them exactly where the Celery trenches were, and one has only to see his Peas growing, or to inspect the specimens of them which he exhibits from time to time at some of the great London shows to be convinced of the excellence of his mode of culture. In localities in which the soil is of a light character, the trench system is best, as in that case a proper quantity of marl, clay, or heavy loam well pulverised can be added with facility. In all cases the ground should also be properly drained, as few crops succeed well in wet, badly-drained soil. Many kinds of manure are used, such as that made by pigs, sheep, fowls, deer, &c.; and many employ artificially-prepared manure, but for general purposes the best is horse or cow manure, a little soot being added to keep away worms.

Gathering.

If prolongation of bearing be desired, Peas should not be gathered indiscriminately, as is often done, but the oldest of the pods should be removed as often as possible after they have become fit for use, inasmuch as one pod allowed to get old will weaken the bearing properties of the plant more than many young ones; therefore, it is better to gather and throw away than allow them to remain on the plants after they are fit for use. In plucking the pods from the haulm both hands should be used, so as not to break and damage the plants, picking only such pods as are moderately well filled, for if young and old be gathered together they boil unequally. Gathering for exhibition is also an operation that does not generally get the care bestowed upon it which it deserves. When Peas are wanted for exhibition they are not unfrequently gathered by a garden boy or by some such person, who takes no pains to gather them carefully. Gathering Peas for exhibition requires, comparatively speaking, as much care as cutting Grapes, but how seldom do they receive that attention. Only those who have some knowledge of the matter should be allowed to gather Peas for such a purpose. A pair of scissors should be used to cut off the pods, cutting them all with the same length of stalk, care being taken not to touch the pods, for fear of rubbing off the bloom. The pods should also be as nearly as possible of the same length, and equally well filled.

Pea Destroyers.

Slugs, snails, and an insect called the Pea-weevil, are the principal enemies that attack the Pea whilst it is young. They are deposited in the ground, and as soon as the young plants show their heads above the surface, these destructive pests attack them. Soot is often used as a remedy, and it is doubtless effective in dry weather, but rain washes it all away, and it has to be frequently renewed until the amount of the soot injures the roots of the Peas. Wood and coal ashes are also used for keeping Pea enemies in check, and if spread thinly over the ground, they answer the purpose better than soot. There is also a maggot called Bruchus granarius, which gets inside the pods and spoils the Peas. For this the best remedy is to examine carefully the Peas while they are quite young, and remove all traces of the pest that can be found. Rats and mice often attack Peas, but of these two mice are the most destructive: they ferret the Peas out of the ground almost as soon as they are sown. Chopped Gorse sown in the rows with the Peas is recommended as a sure preventive. Rubbing the seed in red lead previous to sowing is also often done for the same purpose, but we have seen mice carry off the Peas, red lead and all. Paraffin mixed with Peas before planting is considered to be as effectual as anything that has yet been tried. The best way, however, is to catch the mice; this is sometimes done by sinking glazed vessels in the ground, and half-filling them with water, the edges of the vessel being rubbed over with grease, but the best trap with which we are acquainted consists of a common brick swung on a thread between two sticks, and baited with Peas. Get two small sticks about 6 in. long, push them in the ground about 2 in., and about 5 in. apart; then get a piece of cotton-thread with three or four Peas strung on it, tie this to the top of each stick, and on this rest the brick in a slanting direction, as is done in the old figure-of-four trap. The mice will go under the brick, break the thread, and get crushed to death. Pullinger's Patent is said to be a good trap; it does not require setting or baiting after the first bait of Wheat or Rice has been placed in the receptacle, as the mice cannot get at it, and large numbers of mice are caught by it in a very short time. Its price is 2s. 6d., which, as compared with that of other traps, is high, but with care it will last for years. Birds of various kinds are at times very destructive to Peas, especially after the pods are beginning to fill; we have frequently seen them attack the young plants as soon as they showed themselves above ground. This can be prevented by using common Pea-wires, or by means of strings of cotton tied to small sticks and allowed to move with the wind. An effectual plan is to soak the Peas in Bitter Aloes or Gentian—a decoction which will not in any way injure the growth of the Peas. Jackdaws and several of the finch tribe are terrible enemies to Peas, the former tearing the pods, haulm, and all, and making sad havoc in the rows. The finches prefer quietly extracting the Peas from the pods and leaving them empty; long sticks, to which are attached pieces of white calico, will help to keep them away, but the most effectual remedy is a boy to frighten them off. Cats are sometimes employed in gardens, in which they are useful in scaring away, both birds and mice. Of mildew little need be said; it is chiefly caused through want of moisture at the roots, and the best safeguards are deep trenching, heavy manuring, and copious watering. If, under such circum-

stances it should appear, then dust the affected parts with flowers of sulphur.

Peas in Market Gardens.

These are grown in the immediate neighbourhood of London, but the greater portion of the Peas that come to Covent Garden Market in summer and autumn are grown in Bedfordshire, distant parts of Surrey, Kent, Essex, Hertfordshire, West Middlesex, Bucks, Berks, and other neighbouring and distant counties. The favourite sorts are difficult to name, on account of the partiality that different growers have for different kinds; certain it is, however, that the early dwarf kinds are universally the most desired, on account of their quick returns, the small space they occupy compared with tall Marrows, and because they require no stakes. Beck's Little Gem is much liked for an early crop, on account of its dwarf habit and good qualities. Other sorts, highly esteemed by market gardeners, are Early Frame, Croom's Dwarf, and Bishop's Dwarf. As a rule they are sown for a first crop in January, and invariably on a dryish soil, and in as sheltered a place as possible, other sowings being made fortnightly in succession till April, or even till the 1st of July. In many instances the first sowing of Peas is made in December on a warm border; but, considering that they must be sown a little deeper than in January, and the risks to which the seeds are liable from mice, birds, insects, and damp, it is a much-disputed point amongst good growers whether the December sowing has any advantage over that made in January; whilst many contend that the produce of the latter is quite as early as that of the former, and the crop is less subject to risks. In making early sowings, it is a practice with market gardeners to choose a fine day to break down the ridges (the ground being previously manured and trenched), measure off the lines and draw the drills in the forenoon, and to leave them open till the afternoon, so that the soil in them may dry a little, and become thereby warmer; then to sow the seeds and cover all up before the evening. The drills vary from 2 ft. to 3½ ft. apart, according to the rankness or dwarfness of the sorts grown, and the object which the cultivator has in view. In the close lines, Lettuces or Spinach are used as inter-crops, but in the more distant ones Cauliflower is the crop usually planted. Picking is often resorted to, and the more attention paid to this, the longer will the Peas continue to bear. For seeding purposes the Peas in the rows are shifted once or twice from one side to the other, so as to preserve the pods from rotting with the damp and from being destroyed by snails, and to cause all to ripen alike and well. Laxton's William the First is a fine, new early Pea for market purposes. It is of about the same height and habit as Sangster's No. 1, and equal to it in earliness, but the pods are larger, fuller, and as green as those of Prizetaker, the Peas also being deep green. Multum in Parvo is also largely grown in many places as a market Pea with the best results, coming in, as it does, quite as early as Sangster's No. 1, but having larger pods, while the Peas are as delicious as Veitch's Perfection. It grows to a height of from 16 in. to 18 in., can be sown in rows 20 in. apart, wants no laying, and if cut with frost, as the early Peas often are, it will send up a profuse second growth that will bear a heavy crop. Laxton's Omega will also, on account of the deep green colour of its pods and Peas, become a favourite market Pea. It is a dwarf Ne Plus Ultra, but hardier and as good a cropper; the pods fill well, the Peas being still soft and juicy when the shells are full to bursting; it is a fine dwarf late variety.

Early Peas in Pots.

Since so many excellent kinds of dwarf Peas have come into cultivation, many of them as early or nearly so as the taller-growing varieties, Peas are looked for much earlier than they were some years ago. Potting them, therefore, and placing them in pits, orchard-houses, &c., has now become a general practice, and we have seen Peas grown in this way produce good crops. Peas in pots should be grown stout and strong; if once allowed to become drawn they will prove anything but satisfactory. They should be raised in round flat pieces of turf cut according to the size of the pots in which they are to be grown, pricking in the Peas about 2½ in. or 3 in. apart, and placing them in any warm situation until they are up; an early Peach-house or Vinery answers the purpose perfectly, and if placed where the turf can get warm they come up quicker and stronger than they otherwise would do. As soon as they are up they should be placed in the lightest situation possible close to the glass, where they will have the benefit of plenty of air whenever the weather is favourable. When they have attained a height of 5 in. or 6 in. they should be transferred to pots, the best size for the purpose being 8-in. or 10-in. ones; these will be found sufficiently large and yet not too large. Good drainage is absolutely necessary, and almost any good garden soil will do to pot them in, but the best is one-half good sandy turf chopped rather small, one-quarter well-rotted leaf-mould, and one-quarter good old cow manure; if a little soot, too, be added, it will be found beneficial. In potting the soil will require to be made firm but not too hard, as the roots of Peas love to ramble in light rich soil; strict attention must be paid to watering, for if once the soil gets sodden the crop seldom comes to perfection. Sticking depends upon where they are grown; if in pits, a few small sticks will be necessary; but if on shelves in houses, a piece of cord strained from end to end for the haulm to rest on will answer the purpose better than anything else. When they show bloom they may be topped; this will greatly enhance the development of the pods. In selecting varieties for pot culture choose kinds that are dwarfest in habit and that produce the greatest amount of pods in the smallest space; quality must not, of course, be altogether overlooked, but in general it is of second-rate importance in very early Peas; Mr. Tillery, of Welbeck recommends Blue Peter as being the most productive. Laxton's Unique is also said to be a good kind for pot culture; Early Gem is likewise a suitable Pea for this purpose, and there is a variety called Dwarf William the First which is as good, perhaps, as most of the dwarf varieties, as it branches early and produces fine deep green pods in great abundance. If, however, only one variety be grown, Blue Peter is the best; if a second one be needed, take Unique; and if a third, Dwarf William the First. These are undoubtedly the three best sorts for pot culture.

Young Tops for Green Pea Soup.

The tops of Peas are frequently used for flavouring soups, &c., in winter, where grown for that purpose; the seed should be sown in boxes or pans, and placed in any warm house or pit close to the glass, about six or seven weeks previous to their being wanted. They must be kept moderately moist, and when they have attained the height of 5 in. or 6 in. they will be fit for use. These, beaten through a sieve, make a fair soup, but, if mixed with dried Peas also passed through a sieve, it cannot be distinguished from genuine Green Pea soup. The strong-growing Marrows are the best kinds for this purpose, as they produce larger and better-flavoured tops than dwarf kinds. The more light, sun, and air they receive the better the flavour. Sowings may also be made out-of-doors expressly for this purpose. S.

Kitchen Garden Walks and Edgings.—Mr. Groom (see p. 65) seems to associate me with the advocacy of untidy walks and edgings in kitchen gardens, for he states that his remarks regarding perfect order in kitchen gardens has called forth strong expressions of disapproval from me. Surely Mr. Groom does not consider me bound to think exactly as all correspondents who send contributions to "The Gardener" think. It so happens that I have never given expression in "The Gardener" or in any other periodical to my views on this question, and think it may be of very little importance to the public what these views may be. Those who know my practice in this department will, I think, be the first to suspect that Mr. Groom's statement is not quite accurate, and I notice that statement, not for anything that may affect myself, but simply because it is not correct, and on that account it ought not to go unheeded. It is all very well to carry out the highest style of keeping in a vegetable garden if its owner wishes it, and supplies the necessary labour; but when a gardener is not allowed sufficient men to do this—and plenty are in that position—what is the use of preaching what cannot be practised? Supplies of vegetables, as a rule, are what are first looked for from the kitchen garden; its keeping is often quite a secondary matter, and who has any right to dictate to the owner?—Editor of "The Gardener."

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

JULY 19 AND 20.

THIS was a most interesting and attractive exhibition, strikingly fine collections of fruit being furnished in competition for Messrs. Veitch & Son's prizes, and scarcely less could be said as regards the vegetables, for which prizes were offered by Messrs. Sutton & Sons, Messrs. Carter & Co., and others. Pine-apples were especially good in quality, as were also Peaches and Nectarines. Grapes, on the whole, were excellent; nevertheless, it is rather too early in the year to see large clusters of perfectly finished fruit; indeed, many of the black varieties would have been all the better for hanging on the Vine a few weeks longer, and a large proportion of the Muscats had not exchanged their apple-green tint for one of rich amber, a colour so much coveted by all good growers of Muscats. Among vegetables we noticed evidence of incorrect naming, a dish of Nantes Horn Carrots being named "Improved Surrey," and a dish of the Long Surrey ticketed "Early Horn." Pelargoniums were fairly represented by collections from Chiswick, and the prizes offered brought good collections from the principal growers and raisers. Although it is getting rather late for Roses, some fine blooms were furnished by Mr. Cant, Messrs. Paul & Son, Mr. Chas. Turner, and others, and the large tent was made especially attractive by the combined efforts of the principal nurserymen, who sent extensive miscellaneous collections of decorative plants and cut flowers.

First Class Certificates.—These were awarded to the following new and rare plants:—

Begonia Viscountess Doneraile (Veitch).—A dwarf, robust dark-leaved variety, having purplish-red stems, and bearing axillary three-flowered pedicels, being brilliant crimson-scarlet in colour. This is one of the most distinct and striking of all the tuberous-rooted varieties. It is, indeed, difficult to imagine a more useful decorative plant for pot culture.

Utricularia Endresi (Veitch).—The white-flowered U. montana is now well known in gardens, but not so this delicate little gem, which resembles it in all essential characteristics, if we except colour, which in this is a most delicate mauve or lilac, with a blotch of soft lemon-yellow on the throat.

H. P. Rose, Mrs. Laxton (Laxton).—A distinct and beautiful English-raised variety of good form and substance, the colour being a bright rosy-purple, almost crimson when in the bud ftate. It well deserves a place among English-raised kinds.

Zonal Pelargonium, Leamington Lassie (J. H. Hawley).—This is a strong-growing plant of dense habit, bearing compact, well-elevated trusses of semi-double pink flowers. It is likely to be much valued as a distinct and effective pot plant, and is worth growing for cut bloom, the blossoms being remarkably persistent.

Gymnogramma Alstoni.—A strong-growing and very distinct gold Fern, having the singular habit of turning up the edges of its minor division, so as to show the golden colour beneath, and these upturned pinnæ, contrasted with the fresh, dark green upper surfaces of the fronds, give the plant a unique appearance. Not the least singular point connected with this novelty is the fact that when grown from spores the variety is exactly reproduced, or, to use a popular phrase, the seedlings "come true;" it is, therefore, likely soon to become plentiful.

Picotee, Princess of Wales (Perkins).—This received a second-class certificate. It is a clear sulphur-coloured self, well worth culture as a decorative plant, or for cut flowers.

Miscellaneous Decorative Plants.—In the large tent was a beautiful central group contributed by Messrs. Veitch & Sons. It consisted of Crotons, Agaves, Palms, and Ferns of various kinds, among which choice Orchids, such as Masdevallia Harryana, M. Lindeni, Disa grandiflora, Stanhopeas, and Odontoglots, were conspicuous, also the white-flowered Lapageria, Lilium auratum, and Ixoras of various kinds. One of the rarest and most distinct of all the Orchids shown in this group was Vanda insignis, which has chocolate-spotted flowers with a broad, concave, lilac lip. A large group of stove and greenhouse plants, Ferns, Palms, Cycads, and Orchids came from Mr. B. S. Williams; and Messrs. T. Jackson & Son, of Kingston, also furnished a very attractive and well-bloomed collection of Heaths, Ixoras, Allamandas, and a well-bloomed plant of the large-flowered Rondeletia speciosa. Among Orchids which fringed this group we noted Saccolabium Blumei majus, bearing a long, pendent spike, Phalænopsis rosea, the delicate green Dendrochilum filiforme, and other equally interesting species. One of the freshest and best grown groups of decorative plants in the show was that contributed by Mr. J. Wimsett, of the Ashburnham Nursery, Chelsea. In this were excellent Crotons, Dracænas, and Palms, and a very fine specimen of that best of all exhibition Ferns, Davallia Mooreana. An attractive group of succulent plants came from Mr. R. Dean, in which were pans of Sedum acre elegans, S. corsicum, and S. lydium, all good carpeting varieties, and with these were associated Sempervivum montanum (an elegant, fresh green, rosette-shaped variety), S. arboreum, S. arachnoideum, S. calcareum, and other species, which, arranged along with mauve-coloured Stocks and blue Lobelias, were strikingly effective. Messrs. J. & C. Lee showed a large group of stove and greenhouse plants, Ferns, Aralias, and in front a row of the coral-berried Duckweed (Nertera depressa). Mr. J. Aldous sent a good group of decorative plants, among which Hydrangeas and Kalosanthes were conspicuous. Messrs. Rollisson & Sons had a large and well-arranged group of Orchids, Ferns, fine-foliaged plants, succulents, and flowering decorative plants of various kinds, which were much admired, as was also a choice collection of variegated and ornamental-leaved trees and shrubs from Messrs. Paul & Son, of Cheshunt. A good collection of Lilium auratum, Zonal Pelargoniums, and Palms came from Mr. J. Laing, of Stanstead Park Nursery, Forest Hill; and Messrs. E. G. Henderson sent a choice collection of double-flowered Zonal Pelargoniums. Messrs. Osborn & Son contributed Palms, Dracænas, and Ferns, including a very fine specimen of Davallia Mooreana, fully 6 ft. in diameter. The most effective and artistic group in the show, was, however, that sent by Mr. John Wills; it consisted of tall Tree Ferns, Dracænas, and Palms, fringed in front with upwards of a thousand pots of Selaginella, from which sprang graceful Palms, Caladiums, and Cyperus, and on which reposed white Water Lilies and Roses of different colours. Mr. Charles Turner sent pyramidal green-leaved and variegated Ivies, and a smaller group came from Messrs. Lane and Sons. Messrs. Veitch & Sons showed a pretty little Begonia named B. Davisi, which bears three flowered stems of bright, orange-scarlet flowers, the whole plant being only 3 in. or 4 in. in height. From the same exhibitors came Oncidium prætextum, a distinct variety of the O. crispum type; and a very small plant of Vanda Lowi was sent by Mr. H. G. Elliott, bearing a long spike of yellowish-crimson spotted flowers. Mr. Laing exhibited flowering specimens of his new hybrid Fuchsia, named Laing's Hybrid, and from Mrs. Edward Fox came a select group of Roses modelled from Nature in wax; all were portraits, and among the most successful of these were Baroness Rothschild, Maréchal Niel, and Marie Van Houtte. These were exceptionally good in form and colour, the foliage being especially perfect. Mr. A. Dean sent a Potato stem which had been grafted on a Tomato, as a curiosity. Messrs. Sanders & Co., of St. Albans, furnished a large basket filled with an annual Candytuft, what the Rev. M. J. Berkeley remarked was a variety of Iberis coronaria, a species figured by Sweet some years ago. It bears dense heads of fine white flowers, thrown well up above its dark-green fleshy leaves, and will be useful as a hardy decorative plant. Mr. C. Turner sent a creamy variegated variety of Ardisia crenulata, and an attractive group of Lilies was contributed by Mr. G. F. Wilson; among these we noted L. longiflorum, L. Krameri, L. Browni, L. philadelphicum, L. Humboldti, and others. Mr. Charles Noble sent a yellow variegated variety of Thujopsis borealis, named aurea, which will doubtless prove useful as a hardy decorative shrub.

Messrs. Veitch & Son's Prizes for Fruit.—The best collection of ten dishes of fruit came from Mr. W. Coleman, gardener to Earl Towers, of Eastnor Castle, Ledbury, who had superb examples of Bellegarde Peaches and Elruge Nectarines, Governor Wood and Black Eagle Cherries, Brown Turkey Figs, Frogmore late Pine Strawberries, Golden Gem Melon, very fine Black Hamburgh Grapes, and a good Queen Pine. The only weak point in this collection was the Muscat Grapes, which, although remarkably well grown, were not perfectly ripe. Mr. Sage, gardener to Earl Brownlow, of Ashridge Park, had very fine Brown Turkey Figs, Dr. Hogg Strawberries, Royal George Peaches, Elruge Nectarines, a dish of McLaughlin's Gage Plums, also Muscat and Black Hamburgh Grapes in excellent condition, and good Bigarreau Cherries. Mr. Tillyard, gardener to the Countess of Yarborough, Brocklesby Park, was third, with good Muscat and Hamburgh Grapes, a Queen Pine, excellent Gros Mignonne Peaches and Elruge Nectarines, Elton and Black Tartarian Cherries, Victoria Plums, and a small hybrid Cashmere Melon. In the class for six dishes Mr. T. Bannerman, gardener to Lord Bagot, of Blithfield, Rugeley, was first with finely finished Muscat and Black Hamburgh Grapes, a good, smooth, Cayenne Pine-apple, Trentham Hybrid Melon, Royal George Peaches, and Elruge Nectarines. Mr. Cox, gardener to Earl Beauchamp, Madresfield Court, was second with excellent Black Grapes, a good Queen Pine, a very fine examples of Royal George Peaches, Elruge Nectarines, and a handsome Golden Gem Melon. Grapes.—The best three clusters of Muscats came from Mr. T. Bannerman; Mr. Woodbridge, gardener to the Duke of Northumberland, at Sion House, furnished very good but hardly ripe fruit, to which a second prize was awarded; Mr. Wallis, gardener to E. M. Munbey, Esq., of Shipley Hall, Derby, was third, with clean, shapely, but imperfectly ripened clusters. In all eleven exhibitors competed with Muscats, but a large proportion of the fruit was wanting in ripeness. The best Black Hamburghs were represented by three massive clusters from Mr. T. Barnes. The Quinta, Chirl, Salop.—These were shapely and stout, as firm as if cut out of marble, each bunch averaging about 3 lb., the colour and bloom being perfect; Mr. W. Coleman was second with larger-berried bunches, but not so well finished as the last; Mr. T. Coomber was third with small, well-finished bunches. Thirteen exhibitors competed in this class with fruit in all cases excellent. In the class for three bunches of any variety, except Muscat of Alexandria and Black Hamburgh, Mr. T. Bannerman was first with three medium-sized, but in every way excellent, clusters of Madresfield Court, one of the best of all comparatively new Black varieties when well-grown, and one which has been largely grown for Covent Garden Market during the present spring, a fact which testifies not a little to its general excellence; Mr. Barnes, who was second, had two clusters of the Golden Champion, and a well-grown bunch of Madresfield Court; Mr. Sage was third with well-finished Buckland Sweetwater. Twelve entries were made in this class. In addition to those above mentioned, Mr. Deaville had well-ripened clusters of Black Prince. Excellent examples of Royal Ascot came from Mr. R. J. Ashton, of Bishopsgate House, near Staines; Mr. Allward, gardener

at Lower Woodside, Hatfield, sent three well-set bunches of the delicious Muscat Hamburgh; and good stands of the new Duke of Buccleuch came from Messrs. Lane & Son, of Berkhamsted, and smaller clusters from Mr. Wildsmith, of Heckfield. Peaches and Nectarines.—Among the sixteen dishes of Peaches which were sent for competition we noted excellent examples of Barrington, Noblesse, and Violette Hative; Bellegarde was also shown in good condition, and the remainder consisted of Royal George, still one of the best varieties grown for a general crop. The best Peaches shown was a dish of Noblesse, furnished by Mr. Fennell, gardener to E. Cazalet, Esq., Fairlawn Park, Tunbridge; the next best came from Mr. Hill, gardener at the Poles, Ware, who had very fine fruit of Barrington; and Mr. Coleman, who was third, had the best-coloured fruit of Bellegarde in the exhibition. The best dish of Nectarines came from Mr. Jamieson, gardener to the Earl of Crawford, the second best being fruit of the same variety, grown by Mr. Edmonds, gardener to the Duke of St. Albans at Bestwood, Nottingham. The third prize went to Mr. Hill, of the Poles, Ware, who had a very fine dish of the Murray variety. Nectarines were represented by excellent fruit from eighteen exhibitors. Among them we noted the rich orange or blood-coloured Murray Nectarine, Elruge, well coloured; Stanwick, a greenish-yellow fruit, marbled with red on the sunny side; Violette Hative, small, but highly coloured; and excellent dishes of the mottled Hants Tawny and Victoria. Of Pine-apples, about forty fruit were shown in competition for the prizes offered for the best three. Mr. Wyness, gardener to G. Keith, Esq., Montrose, had the best Queens, splendid fruit, three of which weighed at least 18 lbs. Mr. Chamberlain, gardener to H. Thompson, Esq., Bushy, Herts, had three handsome fruit, also Queens; Mr. Tillyard being third. In Messrs. Carter and Co.'s class for Melons, Mr. Coomber, gardener to J. Rolls, Esq., was first with Read's Scarlet-fleshed and Bloxham Hall, both scarlet-fleshed varieties; Mr. Neighbour, gardener to G. Wythes, Esq., was second with the Hero of Bath and Bloxham Hall varieties.

Miscellaneous Fruit.—A good miscellaneous collection of fruit (not for competition) came from the Royal Gardens, Frogmore. It included two remarkably fine examples of smooth Cayenne Pines, weighing 9 lb. 14 oz. and 9 lbs.; Buckingham Mignonne Peach, a kind much admired, but very like Noblesse; Bigarreau Cherries, Victoria and Goliah Plums, and a dish of Frogmore Early Seedling Apricots, small, but well-coloured; also a fruit of the Royal Ascot Melon. Good specimens of orchard-house grown Beurré d'Amanlis Pears came from Mr. J. S. Virtue, of Oatlands Park, Weybridge. Several varieties of Apples were also sent to show their keeping qualities, but none of them were of especial merit. Mr. R. Gilbert sent a very fine dish of Jackson's Tomato, a selection from Hathaway's Excelsior, and a black-fruited Grape named Abercairney's Seedling, raised forty-two years ago, and of very good flavour. Mr. Cox, of Redleaf, showed examples of Redleaf Russet Apple, to show its keeping qualities. Mr. Brown, gardener to the Hon. Mrs. Bathurst Hyams, furnished a dish of Physalis edulis, or Cape Gooseberry, its pale yellow sub-acid fruits being enclosed in a dry, glistening pericarp. Mr. Cornhill, gardener to J. S. Virtue, Esq., Oatlands Park, Weybridge, contributed a dish of the French Crab Apple, to show its keeping qualities, these being plump, heavy, and in excellent condition. The Hon. and Rev. J. T. Boscawen sent a bunch of the honey-flavoured Grape, Dr. Hogg, one of Mr. Pearson's seedlings. A well-grown selection of pyramidal Peach and Nectarine trees in pots, and a collection of fruiting Figs came from Messrs Veitch & Sons. Messrs. H. Lane & Sons, of Berkhamsted, showed three well-grown pot Vines, each bearing about twenty well-finished bunches of fruit, the varieties being Black Hamburgh and Foster's White Seedling.

Messrs. Carter's Prizes for Vegetables.—Seventeen competitors staged collections of vegetables in competition for Messrs. Carter's prizes, which amounted to nearly £40. The best collection of twelve dishes was that sent by Mr. G. T. Miles, gardener to Lord Carington, of Wycombe Abbey, who had excellent Stamfordian Tomatoes, Leicester Red Celery, remarkably fine, as were also his French Beans, Telegraph Cucumber, Porter's Excelsior Potatoes, Giant Tripoli Onions, nearly 6 in. in diameter, very fine; Green Globe Artichokes, Windsor Beans, Nantes Horn Carrot, and Commander-in-Chief Peas; Mr. W. G. Pragnell, gardener to D. W. Digby, Esq., was second with Tender and True Cucumber, good Asparagus, very good Porter's Excelsior Potato, Canadian Wonder French Bean, very fine; New Giant White Tripoli Onion, and Hardy's Windsor Beans. In this collection were very small Hathaway's Excelsior Tomato, Snowball Turnips, and Early London Cauliflowers, the latter past their best; Mr. Arkell, gardener to A. Shiner, Esq., Cheltenham, was third with a good collection. The best brace of Cucumbers came from Mr. T. Lockie, Oakley Court Gardens, Windsor, the variety being a remarkably fresh and smooth kind, named Lockie's Masterpiece; the second and third prizes were awarded to well-grown examples of Tender and True, one of the best varieties in cultivation.

Messrs Sutton's Vegetable Prizes.—Twelve competitors exhibited vegetables for these prizes, Mr. W. G. Pragnell being first with a well-grown collection, in which we noted Giant Emerald Marrow Peas, Sandringham White Celery, Tender and True Cucumber, Broad Windsor Beans, Canadian Wonder French Beans, Porter's Excelsior Potato, Duchess of Edinburgh Peas, Tripoli Onions, and Nantes Horn Carrots. Mr. Gilbert, of Burghley, who was second, had Royal Ashleaf Potatoes, Laxton's new Marvel Pea, Improved Surrey Carrots, Stadtholder Cauliflowers, Globe Artichokes, and good Tripoli Onions, Hibberd's Prolific Marrow, the handsomest show, and good Broad Windsor Beans. There was very little difference in point of merit between these two collections, but Mr. Pragnell's was, however, a little the freshest in general appearance, and therefore the award was made in his favour. In Messrs. Sutton's classes for six dishes of Peas, Mr. Gilbert, of Burghley and Stamford, was first with Commander-in-Chief (Carter), Duchess of Edinburgh (Sutton), Marvel (Laxton), G. T. Wilson (Carter), Dr. McLean (McLean), all excellent varieties, and in this case remarkably well grown; Mr. W. G. Pragnell was second with Standard Supplanter, Sutton's Emerald, Giant Marrow, Duke of Edinburgh, and Duchess of Edinburgh, well grown, but not so fresh as those sent by Mr. Gilbert. There were eight competitors in this class.

Messrs. Hurst & Son's Prizes for Mr. Laxton's Peas.—In this class eleven growers entered the lists, the best six dishes being those furnished by Mr. G. T. Miles. Among them we noted the following, viz.:—The Shah, Laxton's No. 1, Superlative, Fillbasket, Supplanter, and Standard. Mr. R. Gilbert was second, with the same varieties, except Laxton's No. 1, which was withdrawn in favour of Dr. Hogg, a dark green, full-podded variety of great merit. An interesting collection of seventy varieties of Peas was shown by Messrs. Jas. Carter & Co., who showed examples of the dried Peas side by side with the green pods. Among new varieties we noted an improvement on Laxton's Supreme, a large-podded blue Pea, which fills well, and is likely to prove a first-class kind for culinary or exhibition uses. From the same firm came enormous specimens of Giant Rocca and Giant White Tripoli Onions, the latter being about 8 in. or 9 in. in diameter, and remarkably round and heavy. In the same group, too, were very fine Greengage and Trophy Tomatoes. Mr. R. Fenn, of Woodstock, furnished twelve dishes of his new seedling Potatoes, and a smaller collection came from Mr. Dean.

NOTES AND QUESTIONS—VARIOUS.

Laxton's William the First Pea.—This is one of the best and earliest of Green Marrow Peas; in fact, I question if it would not prove as early as the earliest white varieties, if sown and treated in the same manner. It is well adapted for small gardens, as it is of medium height, and bears a heavy crop of well-filled pods in a minimum of time from date of sowing.—James Groom, *Henham.*

Moorpark Lettuce.—We saw the other day several rows of this new Lettuce, growing side by side with the old Paris Green Cos; the latter formed fresh compact heads, showing no symptoms of "bolting"; whilst the Moorpark had shot up 2 ft. high. They were both sown and planted at the same time.—S.

Winter Onions.—Onions sown last autumn and transplanted in spring, or such as were thinned out and allowed to remain, should, in the event of continuous dry weather, have their necks twisted, or the roots pulled up altogether, previous to rain coming, otherwise they will be apt to split at the bottom, when their appearance will be spoiled.—S.

New Carrot-shaped White Early Turnip.—The "Navet Vertus" early Turnip, the seed of which I had from Messrs. Carter and Co., has proved with me a desirable variety to cultivate. It seems to be grown largely near Paris for market purposes, and, along with the delicious little dumpy-horn Carrots, comes early in for soups. The soil of the kitchen garden here being rather stiff, a bed which I tried produced roots rather forked, but some grown in a frame on light, rich, deep soil, have been quite Carrot-shaped, free from grube, and mild in flavour. To have the French Horn Carrots and these early Turnips fit for use early from frames, will be a great acquisition in large establishments.—W. Tillery, *Welbeck.*

New Peas.—Mr. Laxton's new Pea, The Shah, has proved with me to be a very early variety, about 3 ft. in height, with well-filled pods and good in flavour; it is likely to prove a valuable market variety, from its prolific habit of growth, and not being quite so tall as William the First and Sangster's No. 1. Another new Pea, sent me by Messrs. Carter to prove, marked No. 10, was sown at the same time as The Shah, and proves to be nearly as early. It is, however, 4 ft. in height, bears immense pods, is a green marrow, with ten to twelve Peas in a pod, of excellent flavour, and, from its size of pods, likely to be a first-rate exhibition variety.—Wm. Tillery, *Welbeck.*

Pteris serrulata cristata.—This is an excellent subject mixed with flowering plants for indoor or window gardening. If carefully attended to with water, there is no necessity for potting Ferns every year as they throw up the best heads of fronds when well established, and are therefore eminently suited to the wants of small cultivators.—J. Groom, *Henham.*

Conover's Colossal Asparagus.—Having grown this Asparagus for a few years, I am inclined to think that it is distinct from the common sorts grown here. Plants of it of the same age as the common planted out were fit for cutting a year or two sooner than the common kind, and the heads were finer and larger. Having planted a few plants of it singly in patches here and there in the common soil of the kitchen garden here, I measured the other day a stem of one of these plants, and found its height from the surface of the ground to be 8 ft. 5 in., and thick in proportion. This was after a growth of four years.—W. Tillery, *Welbeck.*

Large blue-flowered Lobelia (Lobelia coronopifolia).—Where can I obtain cuttings or plants of this beautiful old Lobelia? It is figured in one of the earlier volumes of the "Botanical Magazine," and is described as a native of the Cape of Good Hope, whence it was introduced to our garden in 1787. The habit of the plant is similar to that of the wild Groundsel, the flowers being as large as those of the common Butterwort (Pinguicula vulgaris), and similar in shape, the colour being a bright and delicate blue, with a conspicuous white throat. The flowers are borne in pairs, on slender stems, from 6 to 8 in. in height. It is a plant so beautiful that its loss to cultivation is to be regretted.—B.

The Onion Fly.—In this neighbourhood Spring Onions are almost an universal failure, owing to the ravages of this fly. The only good Onions are those that were sown in autumn, and which, when transplanted, yield a heavy crop. By sowing good keeping varieties in autumn, a long-continuous supply may be kept up, as the Tripoli and most of the sorts usually sown in autumn are but indifferent as regards keeping qualities.—James Groom, *Henham.*

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

TOMATO CULTURE.

TOMATOES have risen so much in public favour during these last few years that there is now a great demand for them at all seasons, whereas formerly they were seldom sought after, except when they could be got plentifully out-of-doors. In some parts of the country good out-door crops of them may be reckoned on with tolerable certainty, but still it is advisable to have some in pits, or frames, or in houses, where protection can be afforded them, and thereby much prolong the season when they may be had in perfect condition. Tomatoes are grown largely both in America and on the Continent. From France and Spain come large consignments of them in a fresh state, and from America they come in cans, the contents of which are almost as good as freshly-cut fruit. They are also largely cultivated in market gardens round London. They are likewise often grown for ornamental purposes, and healthy plants of some varieties, laden with ripe fruit, associated with other plants, have a pretty effect. Plants for outdoor culture require to be in readiness for planting out by the first week in June, *i.e.*, if ripe fruit be expected from them in the open air; if delayed longer, the chances of success are greatly diminished. If the weather be favourable during the latter end of May, a plantation might be made, at the same time reserving sufficient to take their places should they get injured by frost. It is a too common practice to sow seeds of Tomatoes in heat in January and February, in order to obtain plants for out-door cultivation, and to allow them to become starved and root-bound in their pots for a long time previous to being planted out. This is sometimes done with the view of checking their growth, and thereby inducing them to fruit earlier and more abundantly than they otherwise would do; but this has been proved to be a mistake, for although plants confined at the roots may show flower earlier than those otherwise treated, yet plants that are grown on freely will not only produce the earliest fruit, and most abundantly, but the finest and best flavoured. The exact time at which to sow the seed will, of course, depend upon the convenience at command for protecting the plants after they are up. If at starting a temperature of 55° or 60° can be given them, the beginning of April will be early enough, but if that amount of warmth cannot be given, and they are obliged to be raised in cold pits, it will be useless to sow before May. Pans are generally used for seed sowing, but if a gentle hot-bed can be spared, it will be better to sow on that, provided the plants are taken up before transplantation would damage the roots. Perhaps the best method of all is to put two or three seeds in 3-in. pots, and place them near the glass, thinning them out after they are up, so as to leave the best and strongest plant in the pot. After that they should be kept moist, and potted on as they require a shift until the beginning of May, when they may be gradually hardened off by putting them into cold frames, and keeping them close for a few days, giving them air more freely as they advance in growth. After they have attained the height of 9 in. or 12 in. the shoots may be stopped, to strengthen the plants and make them more bushy. The growth made after this will be more hardy and shorter-jointed than when the plants were in heat, and they will be more likely to succeed when planted out than if they had not been stopped. A warm situation is indispensable for Tomatoes, therefore, if there be one spot in the garden warmer and more exposed to direct sunshine than another let them have the benefit of it. Vacant spaces between fruit trees on a south or south-east wall are generally the places allotted to them, and where this can be done it is an excellent plan; but the best place for them is a sunny bank, pegging them down close to the ground as growth advances. If a bank be made for the purpose it should be thrown up high enough at the back to give it rather a steep slope; any kind of rough soil will do for making the bank itself, provided a space be left at its base for suitable soil for the plants to grow in. Ridges similar to those employed for Cucumbers are likewise sometimes used, and with satisfactory results. Another way, and a very good one, is to have rough pieces of trellis work or hurdles placed in a slanting direction and firmly secured at the front, the back being supported on stout stakes. Plant then at the base, as in the case of banks, and allow the Tomatoes to run over the trellis, thinly but regularly, and when a good show of bloom has been pinch off the points of the shoots one joint above the flowers. The fruit will then set quicker and more evenly than it would if allowed to make overgrowth. When sufficient fruit has been set for a good crop all flowers should be removed and the shoots should be kept closely pinched in. Thus treated the fruit will swell rapidly, *i.e.*, if the weather be favourable. After planting, a good mulching of rotten manure may be advantageously applied if the weather be dry.

Culture under Glass.

Growing Tomatoes under glass is doubtless a very profitable mode of culture where there is convenience for efficiently carrying it out. Pits, frames, shelves in Vineries, Peach-houses, Pine-stoves, &c., are all places in which Tomatoes may be grown with success, but where a span-roofed Melon or Cucumber-house is at liberty these structures are undoubtedly best adapted for the purpose. Very heavy crops are sometimes produced by plants grown under such circumstances, planted in beds, and trained up the trellis like Cucumbers. Where due attention is paid to stopping and trimming, as recommended for out-door Tomatoes, and where liberal supplies of manure-water are given when needed, and the foliage kept clean and healthy, single plants have been known to produce as much as a stone of fruit. There are, however, few places where a house can be wholly devoted to the growth of Tomatoes; nevertheless, they may be grown on shelves in Pine stoves and elsewhere with considerable success. In fact, the fine Tomatoes shown some few years ago at South Kensington by Mr. Pragnell were grown in pots placed on the back shelves of lean-to Pine stoves, and trained down the roof over the pathways. When grown in this manner abundance of manure-water must be given them, especially after the fruit is set, and in this way good fruit may be produced as early as April. Where pits and frames are used for their culture planting out is the best system, and they should be treated in the same way as Melons; but if a trellis on which to train the plants be suspended about 6 in. or 8 in. from the glass, the fruit will ripen better than they otherwise would do, inasmuch as they will be more exposed to direct sun-light. If pots be used stakes must be applied, and the plants must be kept within due bounds by means of close stopping. Plants to produce very early Tomatoes are best obtained from cuttings struck in December or January, as they possess the property of coming into bearing sooner than those raised from seeds. Large branches, 1 ft. or more in length, if not too hard, will strike root readily in a warm moist heat, and in four or five weeks will have set their fruit, which, if properly treated and there happens to have been a little sunshine, will be ripe in seven or eight weeks afterwards. Good Tomatoes may be obtained in June and July by growing plants in pots, in Vineries, &c., until such places get too shady for them, by which time their fruit will be set, and they may be plunged out-of-doors under a south wall, protecting them at night if the weather be cold. If a late Peach-house or orchard-house be at hand, of course such places are preferable to putting them out-of-doors. Soil of a very rich character is not necessary for Tomatoes, nor is it beneficial, inasmuch as it causes too luxuriant a growth, which is detrimental to the production of fruit. A deep and moderately rich garden mould is best for out-door cultivation, but for pots or beds under glass, turfy loam, roughly chopped up, with one-fourth rotten manure or leaf-mould, and a few shovelsfull of road or river sand added, is most suitable. Wherever Tomatoes may be planted, the soil in which they are to grow should be made moderately firm, as hard soil will hold moisture for a longer period than that which is light and open. Good drainage is also necessary, especially in pot culture, or the soil becomes sour, and the plants soon assume

a sickly appearance. During dry weather abundance of water is necessary, and after the fruit is set strong manure-water should be given. During favourable weather frequent sprinklings overhead in the evening are also beneficial, inasmuch as they keep the foliage clean and healthy.

Varieties and Gathering.

As regard size and appearance, Tomatoes have doubtless been improved, but the new varieties are much more tender than the older ones; therefore, for out-door culture, the latter are to be preferred. The Large Red and Early Smooth Red are the two best varieties for out-door culture, and are largely grown round London and Paris for market purposes. The Orangefield is a good dwarf, hardy, and prolific variety, and should also be largely grown for out-door crops. For early crops under glass, or for general crops, where protection is afforded, Hathaway's Excelsior is perhaps the best variety that can be grown; it is large, round, perfectly smooth, and excellent in flavour, and is valuable for exhibition purposes. It is a kind highly appreciated by American growers, who consider it the best variety in cultivation. Mr. Gilbert, of Burghley, exhibited at South Kensington, recently, fine specimens of a variety named Jackson's, a very large kind and excellent in quality, evidently a selection from Hathaway's. Of the way in which these were grown, Mr. Gilbert gives us the following account:—The seeds were sown on January 26 in heat, and the young plants were pricked off into small pots, two in each, the last week in February. At that time a house containing young Trebbiano Vines was started; the Vines were planted in a bed in the middle of the house, and there were about 3 ft. of space along the front. Here, after making a rough raft to support the soil, the Tomatoes were planted, and they grew away very slowly, but sturdily. The temperature varied from 45° to 50° until the Vines were fairly "broken," when it was raised from 62° to 68° in the daytime. Tomatoes are reported to keep away insects, and this they did, in this instance, effectually. The soil in which they were planted was pure loam, of a light, friable character, mixed with horse-droppings, at the rate of one barrowful of the latter to six barrowfuls of the former. In this they bore well and continuously for many weeks. At one end of the house were a few plants of Carter's Green Gage Tomato, a remarkably good kind. It may be added that a slight quantity of soot mixed with the water when the fruit is swelling has a good effect on Tomatoes. Trophy is a good early Tomato, and Green Gage is highly spoken of by some, but it does not ripen early enough for out-door culture; indoors, however, it is a useful variety. Maupy's Supreme is a handsome variety, but not so prolific as many others. Earley's Defiance is likewise a good early sort and a good cropper, but in shape inferior to Hathaway's Excelsior and Maupy's Supreme. As fast as the fruits ripen they should be removed in order to benefit those that are left on the plants; if any remain unripe until late in the season, they should be cut off with a large piece of the plant attached to them and hung up in a house near the glass, where they will soon ripen if the weather be sunny. It is unwise to overcrop plants of Tomatoes; therefore, where they set their fruit too thickly the smallest should be picked off and used for pickling. Red spider, green fly, and small-winged white fly, are the principal enemies by which Tomatoes are attacked, and these may easily be kept in subjection by means of frequent syringings with Tobacco water. Of late years the Potato disease has attacked Tomato crops just as they are ripening, rendering them useless.

Tomatoes in Market Gardens.

The large red-fruited sort is the only kind cultivated in London market gardens, and growers for market will not be easily persuaded to exchange it for any of the so-called novelties that have lately appeared among Tomatoes. Market gardeners only grow what they are pretty sure will prove remunerative. Early in spring the seeds of the large red kind are sown broadcast in a frame, set on 18 in. in depth of fermenting manure, over which 6 in. in depth of light soil has been placed. In severe weather the frames are protected at night by means of a covering of litter placed over the sashes, but this is removed in the morning when a little air is given. It is advisable to have the young plants as strong, healthy, and stubby as possible, and in order to secure this, a gentle bottom-heat and plenty of ventilation are necessary. Soon after germination they are thinned a little, and when they are about 1½ in. or 2 in. high, they are pricked out into 4-in. or 6-in. pots, two plants being generally put into each pot. Frames are sometimes prepared for these as follows:—First, 1 ft. in depth of fermenting manure is put together in the form of a bed, on which is placed 8 in. in depth of soil, and in such beds pots filled with mould are plunged up to the brim. The plants are then dibbled into the pots, and the frames shut up and kept close for a time, until fresh root-action has taken place. They are afterwards kept freely ventilated until May, when the sashes are entirely removed during the day, and only replaced and lifted up at night or in wet weather. By planting time, which is the last week in May and first fortnight in June, the plants are thoroughly hardened off, although still unable to endure even a slight frost. In market gardens Tomatoes are seldom planted against walls, as is done in private establishments; a warm situation convenient to water is, however, selected for them, and in such positions they produce abundance of fine, large, well-coloured fruit. The earliest planted ones are generally put in the most favoured positions, such as a warm border, or on either side of "spent" Mushroom ridges, where they are well sheltered. If planted too early they are liable to be cut down by late frosts, in which case entire removal and replanting is the safest remedy; but if the damage be not too great, the sound eyes will produce shoots that will carry heavy crops. The second or main planting is made on a more open, yet warm, quarter, in rows about 3 ft. apart, and the plants are set the same distance asunder in the rows; indeed, 3 ft. is a universally recognised distance at which Tomato plants should stand apart. In some cases a trench is thrown out 18 in. deep and 3 ft. wide, and 1 ft. in depth of fermenting litter is packed into it and covered with soil. On these trenches, which are 3 ft. asunder, are planted two rows of Tomatoes only 18 in. apart, but the plants in them stand at the usual distance apart, and alternate one with the other in the different rows. After planting, if frost be apprehended, an inverted pot is placed over each plant at night until all danger is over. A mulching of decayed manure is generally put over their roots, and as they advance in growth little earth basins are drawn up to them with the hoe for the retention of water, which is given to them liberally. Stakes 4 ft. long are inserted beside the plants, and to these they are tied with matting as growth advances, taking care to keep the shoots on the sunny side of the stakes. To such as were planted against Mushroom ridges, stakes are, of course, unnecessary, as the shoots are pegged to the ridges, on which they thrive well. One of the most important points in Tomato growing is timely stopping of the laterals; indeed, on this alone the amount of produce greatly depends. Some growers retain only one rod to each plant, others two, and a few three, but none exceed that number. Every other lateral is pinched or rubbed off as soon as it appears, and when three good clusters of fruit on each plant have set, the point of the shoot or shoots is nipped out, so as to induce increased bulk in the fruit. If the amount of foliage be too great it is reduced by removing some leaves wholly, and by cutting off the half of a few more, but sufficient must be retained to enable the plants to perform their proper functions, and to shade the fruits whilst they are swelling. As soon as the fruit has attained its full size the leaves may be turned aside so as to expose it to the sun, by which means it ripens more readily, and is of a better colour than when shaded. The ripe fruits are generally picked off twice a week, leaving the greener ones a little longer so as to mature themselves, but should frost come all fruits are picked off, and spread out on hay in a frame under sashes, where they eventually become red. The amount of fruit borne by a patch of Tomatoes in a well-managed market garden is really wonderful. Market gardeners pay unremitting attention to pinching off laterals and leaves, timely stopping of the leading shoots, judicious cropping in the way of bulk and quantity of fruit, and to affording plenty of nourishment by means of frequent supplies of pure water and occasional applications of manure-water when convenient, to which are added mulchings, hoeing the ground frequently.—S.

THE INDOOR GARDEN.

CURCUMAS AND THEIR CULTURE.

THE species of Curcuma that find favour with cultivators are few in number; they belong to a somewhat limited family of herbaceous plants mostly indigenous to the hot districts of eastern India, and therefore, in order to grow them well, they require a considerable amount of heat. C. longa produces turmeric, which is much used by the natives of India on account of its medicinal properties. Curcumas are of moderate growth, their leaves attaining a height of from 2 ft. to 2½ ft.; the flowers, which spring from the crowns of the plants, are borne on stout foot-stalks, are singular in appearance, and last for weeks little impaired in appearance. Their distinctness of form renders them acceptable additions to the occupants of the stove, especially where as much variety as possible is desired. They come into bloom during summer and autumn, when flowers are scarcer than earlier in the season. After they have bloomed, they may be dried off like Gloxinias or similar subjects, keeping their roots in a tolerably warm place whilst at rest. They may be increased by means of offsets; these as well as the larger roots should be potted and started into growth in the spring. The small offsets ought to be kept by themselves and grown on to acquire more strength; an 8-in. pot will be large enough for four of the smaller roots, and a 10-in. or 12-in. pot for a similar number of the larger size; they will succeed in either peat or loam, or in a mixture of both; but where peat can be had of good quality, containing plenty of fibre, it is to be preferred; peat of a compact soapy nature is not fit for Curcumas, even if incorporated with leaf-mould, rotten manure, or loam; consequently, where nothing better than such can be obtained, it is advisable to grow them in loam, in all cases using plenty of sand to keep the soil in a thoroughly porous condition; for if the water cannot pass freely through it the feeding fibres of the roots will make little progress, and in that case the growth above ground will not be satisfactory. One-sixth rotten-manure added to the peat or loam, whichever is used, will tend to greatly increase the strength of the plants. The pots should be well drained with 2 in. of crocks, over which a little porous material ought to be laid to keep the soil from getting down and clogging the drainage; press the compost moderately firm in the pots, filling them up to about two-thirds their depth, then put in the roots, and cover over with soil to within 1 in. of the rim; place them in a temperature of 65° at night, allowing 10° higher in the daytime, and do not give too much water to the soil until the young shoots have appeared above the surface, when it may be kept more moist. When first started, they may be set on a tan-bed in the centre of the house; but, as soon as the young growth appears, they should be moved to where they will receive sufficient light to prevent the leaves from becoming drawn. This is of more importance in the case of these plants than in that of most others, as their flowers do not rise above the foliage in the ordinary way. A thin screen will be required when the weather is bright, but do not subject them to permanent shade. As the days lengthen and sun-heat increases, raise the temperature to 70° or 75° at night, with correspondingly more heat in the daytime. Give a moderate amount of air, but do not let them be in a draught by setting them too near where air is admitted.

With these, as with almost all plants that require heat, growth will be accelerated by closing the house whilst the sun is yet upon the glass, as the influence of solar heat in promoting growth, especially in the afternoons when the atmosphere is well charged with moisture, is much more conducive to strength and healthy development than fire-heat. When the house is closed, syringe overhead freely, treatment which should be continued until they show flower, when the syringe will be of no further use, but the atmosphere must not be kept too dry. As the flowers open, the plants may be gradually inured to more air, and when fully expanded they may be removed to the conservatory, especially if the latter be kept at an intermediate temperature; but if not warmer than an ordinary greenhouse, they must not be allowed to remain in it longer than the weather continues warm; after that they should be returned to the stove and supplied with warmth and water at the roots until the leaves show signs of decay, when the amount of water may be gradually reduced in quantity till the tops are dead, after which the roots may be kept moderately dry. They should not, however, be subjected to a low temperature, or they will be liable to rot. Keep them through their season of rest in a temperature of 60°, and early in spring turn them out of the pots, removing the old soil completely and repotting in new material, as recommended for the preceding season.

The following are well worth cultivation, viz.—C. Roscoeana, an East Indian kind, with orange bracts and red flowers, which are produced in July and following months. C. cordata is another East Indian orange and rose-coloured sort, which blooms in July and August. C. rubricaulis, also from the East Indies, generally blooms somewhat earlier than the kinds just named; its flowers are reddish yellow in colour. C. Amada, a variety which comes from Bengal, is also a fine kind whose red and yellow flowers are produced during the summer. C. aromatica has yellow flowers, which are produced during the summer: it comes from the East Indies.

As regards insects, the continued use of the syringe through the growing season keeps in check red spider and thrips. Scale and mealy bug will live upon them, but can be easily removed by sponging, and the yearly decay of the leaves effectually destroys any perfect insects or their eggs that may have got on the plants during the summer. T. BAINES.

TROPÆOLUMS FOR WINTER FLOWERS.

As we have to maintain throughout the year a constant and liberal supply of flowers suitable for cutting for indoor decoration, plants that flower freely during the winter season receive special attention. As a matter of course, good stocks of Bouvardias, winter-flowering Carnations, Camellias, and so forth, are grown. The forcing pit is also kept well occupied to push on plants that do not under ordinary circumstances bloom during the winter season, and amongst other plants we grow rather largely several of the scarlet-flowered Tropæolums. They are, indeed, special favourites, because under a proper course of culture they yield from October until the spring following a plentiful supply of flowers of the most brilliant colour. The flowers are not adapted for bouquets, for the stems are rather brittle, and the perfume is not over-agreeable. But for other purposes, such as the dressing of épergnes for the dinner table and for filling vases for the drawing room, they are not in utility far behind the flowers of other free-growing plants that bloom profusely during the winter season. Their brilliancy of colour is a great recommendation, and as the flowers are by no means insignificant as regards size, clusters of three or four each, arranged round the base of an épergne alternately with the blooms of the Eucharis or white Camellias, produce a remarkably good effect. They can also be employed with advantage in the arrangement of the tops of flower stands, whether they be of the March type or of newer styles. We have several fanciful stands consisting of a broad base supporting slender stems of crystal fancifully formed, and bearing small glass baskets, and for dressing these we find the flowers of the Tropæolums exceedingly well adapted. After the plateau is filled we have only to place in each of these little receptacles two or three of the flowers of the Tropæolums, a small truss of a white Bouvardia, preferably B. longiflora, and a portion of the Maidenhair or some other elegant Fern, and the dressing of the stand is complete. Small trusses of one of the zonal Pelargoniums—Vesuvius, for example—are frequently employed for the same purpose, but they are not so light and elegant, and, as a rule, are not so much admired as the Tropæolums. The Tropæolums of scandent habit will grow vigorously throughout the winter when struck late, provided the temperature be high enough; but to ensure the abundant production of flowers it is necessary they should be struck early and grown to a considerable size by the autumn. As in the case of winter Cucumbers, or of French Beans required for yielding a supply early in the winter, the plants must be full grown before the days become short and the light insufficient for the proper maturation of the growth of plants in a progressive state. The best course, according to my experience, is to strike the cuttings during the first fortnight or so of July, and then shift them on as fast as an extension of root-space becomes necessary, until they are put into the pots in which it is intended they shall produce their flowers. Healthy shoots are selected, and the points are taken off at the fourth joint, for mites of cuttings that can hardly be seen are not desirable. The roots as well as the stems are exceedingly brittle, and when the cuttings are struck several together, and then separated and put singly in small pots,

the roots receive more or less injury. To prevent this we have of late years adopted the very simple plan of inserting the cuttings singly in thumb pots or small 60's, as they can then be shifted on without the roots being disturbed. After the cuttings are struck, the details are exceedingly simple. They are first of all shifted into 6-in. pots, and when these are well filled with roots they are transferred to others 9 in. in diameter, which are quite large enough to carry them through the winter, and, in fact, as long as they will be required. The compost employed consists of good turfy loam, with the addition of a moderate quantity of leaf-mould and silver sand. A thorough drainage is essential, and the pots in which they are put at the last shift should have about 3 in. of small crocks put in at the bottom. Until about the middle of September the greenhouse will be the best place for the stock, and then they must be removed to a stove or other structure where they can have the assistance of a temperature of about 60° throughout the winter. The plants, from the time they are a few inches in height, must have the aid of a stake strong enough to support the growth. The main shoots should not be stopped until they are about 3 ft. in length, and then it will suffice to nip out their points. A second stopping of the leading shoots will become necessary when the plants are from 5 ft. to 6 ft. in height. The laterals must not be checked at all, but be either trained under the roof or be allowed to hang down in a natural manner, as the flowers are produced in greater abundance than when a system of severe stopping is resorted to. When removed to the stove, set the pots upon the side tables about 4 ft. or 5 ft. apart, so that the shoots have room to spread without depriving the plants on the stages below of a fair share of light. In the spring, after the flowers are no longer in request, a few plants should be pruned moderately, and be allowed to remain for the purpose of furnishing a supply of cuttings. The supplies of water must be moderately liberal, but care must be taken so that the watering is not overdone. —"Gardeners' Magazine.

KITCHEN GARDEN WALKS AND EDGINGS.

If the kitchen garden attached to a private establishment, either large or small, is to be looked at from a strictly utilitarian point of view, as it were, a market garden, where nothing is done except with a view to profit, why, then it is questionable whether it is advisable to go to the expense of walks as they are sometimes made. But in few places is the matter looked at in such a parsimonious light, and in large establishments, where the kitchen garden extends to many acres, it is an absolute necessity to have some walks gravelled, unless the principal paths for taking in manure and bringing out the produce are to be, during autumn and winter, often reduced to a little better condition than the tracks in some market gardens wherein the produce for a single market-load has to be brought out in half-a-dozen carts, with the wheels sinking in the soil half up to their naves. A kitchen garden may be all very well without paths on exceptionably dry, sandy soil, but in most places the alleys through the winter season would be little better than ungravelled cattle-tracks to a drinking pond. This is the first time in which I have ever heard it questioned that a well-made roadway, sufficient for whatever purpose it might be required, incurred a wasteful expenditure of money, and this in substance is what is said by those who are trying to make it appear that gravel-walks in a kitchen garden are unnecessary. I leave asphalte or concrete walks out of the question, as, except in few instances, these are not likely to be employed in sufficient numbers to affect the argument one way or the other. Properly constructed gravel-walks, proportionate in extent to the size of the garden, I hold to be a necessity, not merely for appearance sake, but for use and convenience, and apart from this, where there is one employer who does not enjoy a stroll through a well-managed kitchen garden, there are a dozen who do, both themselves and their friends, and who don't hesitate, even when the ground is damp, to step a short distance off the gravelled path, to pick and eat fruit in the way in which it is most enjoyable; ladies even do this, but if the kitchen garden is to be reduced to nothing more than a cultivated field for vegetable crops, however high the standard of management in it may be, it will be seldom visited. If here and there a proprietor is to be met with who, for the sake of saving expense, would grow his vegetables in the same way as is practised in what may be termed the half-farm, half-market-garden system, of which there are many springing up to supply our large towns—against this I have nothing to say; but to advocate the general adoption of such practice in private establishments is a very different affair, and a course which I feel certain will never become general. I am ready to admit that it frequently happens that more finish is given to the walks in a kitchen garden than is necessary, but that has nothing to do with the question. In advocating the claims of walks in a kitchen garden, allow me to be clearly understood, I would not introduce a single yard more than is necessary for utility and convenience, to get about each part with some degree of comfort in all weathers. More walks than there is occasion for, either here or in pleasure grounds, are highly objectionable from every point of view; but to dispense with them altogether in new gardens that are being made, except in very few instances, is an occurrence that I predict will not take place. Even in this utilitarian age there is no reason, but the reverse, why the walks in this department should be so made as to have a prim appearance; all that is required is to have them so constructed as to be dry and serviceable. I have not yet been fortunate enough to meet with anything in a garden, either for ornament or positive use, that does not cost labour more or less; and I maintain that the work spent in the construction and keeping of walks in a kitchen garden sufficient for the purpose required is not thrown away. The question of walks also settles that of edgings. If you have the former you require the latter, or how is the soil to be kept off the walks either when hoeing or when the rain washes it off? I perfectly agree with those who object to Box-edging, for however well it looks there are so many objections to its use, and to that of all other living edgings, that the disadvantages outweigh all considerations in their favour. Box and other live edgings require a good deal of labour to keep them in proper condition. They harbour slugs, and where they exist, salt when required cannot be used within some distance of them, either to the soil or to destroy weeds on the walks. There are now several kinds of tiles that will stand the weather, but where a cheap, durable, yet efficient edging is required, nothing answers better than well-burnt, common bricks set on end, left about 1½ in. above the soil of the border. They are easily laid, and very readily put straight in line if a little displacement should occur through the roller coming in contact with them. T. Baines.

—— That it is at all times easier to point out defects than to suggest improvements is well exemplified by "A. W. H." (see p. 69). In the first place, he speaks of watering and irrigation being impossible in kitchen gardens as at present arranged; but have we not Italian and other gardens full of walks, and yet better watered than even the best laid-out market garden of which he speaks in such high terms? What prevents kitchen garden quarters being properly watered is the overgrowth of the flower garden, which absorbs nearly all the labour which the cultivator has at command. As to irrigation, works of that kind already in existence pay about as well as "Turkish Bonds." There is no reasonable prospect of ever seeing the system largely carried out in this country, where, however, a somewhat improved and extended water supply would be a great desideratum. Nevertheless, the removal or retention of walks and edgings has little to do with the matter, one way or the other. In order to secure good culture I am positive, from long experience, that some kind of roadway, call it what you like—walk, alley, or headland,—is necessary, and the harder that roadway is the better. Indeed, the more thoroughly pulverised the soil is the greater is the necessity for a firm roadway, a fact for confirmation of which we need only go back to last spring, when crops could not be got in at the proper dates, even in well-drained gardens, on account of the mud, and to conduct the traffic on cultivated land during similar weather would simply render it unfit for seed-sowing at all. If walks can be dispensed with anywhere it is exactly where "A. W. H." says they may be needed, viz., in the fruit garden, as the surface of the soil among fruit trees can scarcely be too solid; cultivators cannot crop their gardens as they would a field. Nor are their crops like those of a market garden, valuable in a market sense only, *i.e.*, when they realise most money. On the contrary, they must be had when they are wanted—early, late, or continuous. Where walks are well made, and where there are no more of them than are absolutely necessary, the constant traffic on them will leave but few weeds to destroy. Of walks where not needed I have no experience; but those that we are compelled to have I most unhesitatingly affirm are most economical, if made well at first and kept in good condition afterwards.

Henham Hall. James Groom.

The Orchard House.—During this month the Orchard house harvest may be said to have begun. I have gathered fine fruit of the Royal, Early Oullins, and Peach Apricots. On the 6th July the first fruits of the Early Beatrice Peach were gathered, followed by Early Louise on the 15th, and Early Rivers on the 20th; Hales' Early is now ripening. Some few years since the month of July gave scarcely any early Peaches, except the Early Nutmeg, a kind possessing but little intrinsic value. Keep the house well ventilated night and day, water freely, and syringe in the evening; surface-dress the trees on which the crops are ripening. Next month (August) will be the most productive month of the year, and the trees must be well sustained for their crowning effort.—E.

NOTES OF THE WEEK.

AID FOR THE SUFFERERS BY THE STORM.—It is proposed by Messrs. Fraser, Ware, Sweet, and others, to organise a subscription for aiding the poorer members of the florists' community who suffered by the severe storm of Sunday last. A list of subscribers is in progress, and will be published in next week's GARDEN. Many gentlemen have already subscribed, and we shall be glad to receive any subscriptions forwarded to us pending the appointment of a treasurer. One of the principal sufferers by this event is Mr. Rochford, who also suffered much during a storm of a similar character which took place seventeen years ago, his India-rubber plants and Vines being very much damaged. It is estimated that the under-named lost from 1000 ft. to 20,000 ft. of glass each—the contents of the houses being for the most part destroyed or much injured; the crops in the open air being also greatly injured—viz.:—At Tottenham—Messrs. Ware, Rochford, Waterer, Howell, Beckwith, Maller; at Wood Green—Hansell, Stanley, Solomon, Perkins, Norris; at Leyton and Leytonstone—Wheeler, Sweet, Smith; at Green Lanes—Lewington; at Hornsey—Cleal.

STRAWBERRIES BY POST. — We have received, by post, from Mr. W. Lovel, Weaverthorpe, near York, a cardboard box of Strawberries. Each fruit was wrapped separately in tissue paper; this was surrounded by a covering of coarser paper, after which the fruit was placed in layers and the interstices filled up with bran. These boxes are light, strong enough to resist stamping by post-office officials, and, being cheap, might be used for transmitting samples of choice fruits in small quantities, but we are bound to add that they did not come to hand in what would be called good condition in Covent Garden.

WATERING AND MULCHING FLOWER BORDERS.—The recent drought has shown that nothing in the garden requires more attention, as regards a moist and open surface, than borders in which herbaceous plants are grown. It is true that a really well-arranged border should be almost completely covered with plants, but even in such a case an inch or two of some unobjectionable mulching placed between and under the plants would keep the plants fresh throughout the drought, and serve to enrich the ground afterwards; in fact, the annual mulching might also act as the annual dressing and tend to prevent the need of digging.

THE FORGET-ME-NOT. — Now, when flowers are scarce in the market, owing to drought, the common Forget-me-not is more than ever valuable, bunches of it being the only ones that remind one of the colour and purity of the flowers of spring. The common Heaths, brought in bunches, are also very pretty.

VARIETIES OF ORCHIS LATIFOLIA.—In reference to these, Mr. James Backhouse writes to us as follows:—From the description given in THE GARDEN (see p. 75) of an intense rosy-purple variety of this Orchis found by Dr. Moore at the base of the Dublin mountains, I make little doubt that the plant is identical with the O. Traunsteineri (Koch) which adorns the Alpine bogs of Teesdale. This plant differs from the typical O. latifolia (majalis) and O. latifolia v. incarnata in having the lower floral bracts equalling, and the upper ones shorter than the flowers, and in having the upper-stemmed leaves flat, while in the v. incarnata they are hooded at the apex. It is a splendid plant, putting all the varieties of O. maculata and the other varieties of O. latifolia into the shade. The description given of the variety found by the Hon. Mrs. Barton agrees well with the beautiful O. latifolia v. lagotis (so named several years ago by Professor Oliver) from Mont Cenis. The very broad and beautifully-spotted leaves are strongly marked characters. This, too, is a most beautiful plant, and its discovery in the British Islands makes an interesting addition to our flora. The colour of O. latifolia v. lagotis varies; it is sometimes of an intensely deep, almost black, purple, but usually of a rosy-purple, and in brilliancy it yields to O. Traunsteineri. Both of them seed freely with us.

DANIELS' VARIETY OF CONVOLVULUS MINOR.—This, in which there is a little crimson with much other rich colour, is a notable improvement on one of our most charming and popular old annuals—one which we should like to see more frequently in gardens, well grown, and tastefully disposed.

LINDLEY'S SPIRÆA.—Spiræa Lindleyana is now the Queen of the shrubbery, marvellous in its gracefully divided leaves and plumed spray of flowers. Well placed as a single shrub on the Grass, or a small group, how beautiful it is! When seen so placed, it may serve to illustrate what we have so often pointed out in THE GARDEN—that the common way of crowding a number of shrubs together, and mutilating them at the root by digging, and perhaps at the top by pruning or by overcrowding, which is worse, is a very barbarous and futile, though very common mode of culture.

SOUTH KENSINGTON.—It is rumoured that the Fruit Show of the Royal Horticultural Society, which was announced to be held on November 8, will not take place.

ALPINE PEA-FLOWERS.

DWARF Pea-flowers contribute much to the Alpine flora, and many of them are very beautiful. Everywhere in the Alpine meadows the bright yellow, or rose, or lilac, or blue, or purplish flowers of various dwarf creeping leguminosæ gladden the eye, and they are equally effective in our gardens when properly used. Among those most valuable for the rock garden are various species of Milk Vetch (Astragalus), the Hoary Kidney Vetch (Anthyllis montana), the Hedgehog Kidney Vetch (A. erinacea), the small mountain Coronillas, which form such graceful tufts of blossom, depending from fissures or ledges; the small, prostrate, shrubby and half-shrubby Genistas, so conspicuous in many rocky places throughout Southern Europe; the bright and graceful species of Orobus and Oxytropis, with various others equally beautiful, but, like the Vetches and Everlasting Peas, too tall and vigorous for association with the choicer Alpine flowers. The above plants are all among the easiest to cultivate, thriving best in sandy soil, and demanding no particular exposure or other care.

V.

Striking Cuttings in Sand and Water.—This, although an old system, is yet a very useful one when properly carried out. No doubt a manure bed under a frame is preferable, but such beds are not always at hand. I have many times found the sand-and-water system useful during the early spring months. I generally employ flower-pot saucers for the purpose, as they are handy to move about. As regards the sort of sand, either silver or drift answers the purpose, and no more sand should be put in the saucer than will keep the cuttings from falling over. The base of each cutting should pass through the sand and rest on the saucer. After the cuttings are put in cover the sand with rain-water of the same temperature as that of the atmosphere of the house, to the depth of ¼ in.; then place the saucers as near the glass as possible and free from shade. Every other day or so drain off the water from the saucers, steadying the cuttings with the other hand, and fill up again; water as before. Thus treated, the cuttings are not so liable to damp off, as they otherwise would be, and the roots are more healthy. As soon as roots appear, take some cow manure or clay and mix it with water to the consistency of thin paint, put it into rapid motion with the hand, and fill up the saucers with this liquid, which will soon saturate the sand and give vigour to the plants. Allow the sand to become almost dry previous to potting, when each cutting will lift out with quite a mat of sand and fibre attached to it. Pots should be ready to receive them, and they should be placed on the soil, sprinkling some of it loosely over them and avoiding all pressure by means of the fingers; place them together on the floor or on a hand-barrow, and give them a good watering through a fine-rosed pot, which will wash the soil down among the roots without damaging a single fibre. Treated in this way, not a single plant need be lost.—JAMES SMITH, *Waterdale, St. Helen's, Lancashire.*

The Large White Jasmine (Jasminum officinale).—This is common everywhere, and was so plentiful in the time of Gerard that he tells us that "Master Lyte thought it indigenous." It is not, however, so well known that there are two varieties, one of which has a stronger habit and bears much larger and broader-petaled flowers than the other; indeed, it is much better in every way than J. officinale. This is known in some few gardens where it is grown and appreciated under the name of the Catalonian Jasmine (J. grandiflorum), but it must not be confounded with the J. grandiflorum grown by Mr. J. Wills and other nurserymen as a stove or warm greenhouse plant. Mr. Gordon tells us that this large-flowered hardy plant differs principally from J. officinale in having much larger flowers and leaves, and adds that it is sometimes mis-named J. hispanicum. I saw it a day or two ago in Mrs. Clarke's garden at Wandsworth Common, and as the ordinary form is growing beside it, its inferiority is seen at a glance. London mentions a double-flowered variety, but says it is rare, and also gold and silver variegated forms of J. officinale.—B.

A WHITE JAPAN LILY.—To Mr. G. F. Wilson we are indebted for a specimen of what he calls a white variety of Kramer's Lily (the true L. japonicum, according to recent investigations). It is a remarkably beautiful kind, reminding one of a pure white L. auratum. It is distinct and of great value, and will, we hope, become plentiful in good time.

RENANTHERA LOWII IN BLOSSOM.—This rare and singular Orchid is now finely in flower in the garden of Mr. Dodgson, Beardwood, Blackburn. It is about 4 ft. in height, and is furnished with four flower-spikes, each some 6½ ft. in length, bearing in all 127 blooms.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

No matter how great the heat there are hardy flowers that do not lose their beauty through it, and, among these, not one is better than the diminutive Calandrinia umbellata, which, when well grown in sandy or peaty soil, and fully exposed, is brilliant and lovely indeed. Growing in a chink in properly formed rock-gardens, it is perennial, like, in fact, any hardy Alpine flower, but in ordinary garden-soil it requires to be raised from seed now and then. Indeed the plant is so singularly effective in its way that it is desirable to raise some annually. If not planted on a rocky bed or rock-garden, it is very much at home on such small beds as those round standard Roses. The beautiful races of Pentstemons alluded to last week by Mr. Niven, under the head of P. Hartwegi, are now in bloom, and will long remain so where well grown. The Carnations, too, in their various forms, have been beautiful throughout the hot weather; in point of fragrance how much superior they are to the richly-scented Lilies, of which very few can be placed in a room without unpleasantness! The Alstrœmerias are brilliant plants in hot weather, particularly A. aurantiaca (aurea) and its varieties, so easily grown in free soil. One of the most precious of all hardy bulbous plants is Alstrœmeria hæmantha (sometimes called A. pulchella), with brilliant coral-like flowers, borne in very large umbels; it, however, goes out of flower somewhat earlier than the common orange Alstrœmeria. Among the most valuable flowers of the warmer days of summer are some of the Scabious race, notably Scabiosa caucasica and the dwarfer ones S. amœna and S. Webbiana, and the pretty and modest-looking little Asterocephalus Parnassi, which is allied to them. The singular-looking and stately Alpine Eryngium is now a fine object; there are various other kinds worthy of culture, though not often seen. A whole crowd of Lilies adorn the garden now; L. colchicum flowering from spring-planted bulbs, and therefore later than the plant naturally produces them, is as fine as any. Bravoa geniniflora is in bloom out-of-doors. The fine Queen of the Prairie Spiræa (S. venusta) has had its blooming period shortened by the heat. To see this in perfection it ought to be grown in rich soil, indeed, we should not hesitate to place it beside a stream or other water. The old double-scarlet Lychnis is one of the most brilliant plants of the garden in July, though in point of size it is far surpassed by varieties of Japanese Lychnis. Macleayia cordata is full of flower now, and when grown on deep, free soil, is a striking object. Quite a host of yellow, composite flowers bloom at this season, and are very showy; many of them deserve culture, but, externally, so resemble each other that they should not be too freely used, and only the most distinct kinds. Probably a great number of these will eventually find their way to the wild garden. Among them Helenium autumnale is a good perennial, and so is Inula montana, both good, strong, border flowers which will grow in any soil. Several Flaxes seem to enjoy the heat: Linum tauricum and L. viscosum for example. The long purple-rose spikes of the North American Liatris scariosa are among the most effective flowers in the garden; surpassing all, however, for brilliancy, as we write, are the numerous tall Phloxes; these, during such a season as the present, or, indeed, any season in the drier districts, are much better for a deep mulching to keep the ground moist and open. Also we have the following in bloom:—Stocks, Gladioli, Dicentra eximia (late flowers on a spring-flowering plant); Nasturtiums, most effective when used sparingly and with taste; Delphiniums, Verbena venosa, various Hairbells, the large white Bindweed (Calystegia dahurica), the double rose-coloured Bindweed (Calystegia pubescens fl.-pl.), the Bearded Pentstemon (P. barbata), a beautiful plant for association with the smaller Yuccas and other subjects which flower at this season; the blue Convolvulus mauritanicus, quite hardy round London, and a "good perennial;" some of the Statices, and the tall Verbascum vernale and its white variety, are both remarkable plants. Among novelties or plants seldom seen may be named Tulbagia violacea, a graceful-looking bulbous flower (Ware's Nursery); Cypella Herberti (Parker's Nursery); Ranunculus Bertoloni; Hypericum olympicum, a very showy, large-flowered kind, distinct and very good. Lastly, there is, in Mr. Parker's collection, a fine group of plants of the scarlet and yellow Worm Grass (Spigelia marylandica), one of the rarest of the dwarfer bog garden flowers, and also one of the most brilliant gems among hardy flowers, while wholly distinct from anything else in cultivation. There is also a curious Centaurea at the Hale Farm Nurseries (C. Fenzli), with beautiful pale brown scales, a large species.

Great Destruction in Gardens.—On Sunday evening last a hail-storm was experienced at East Barnet, Southgate, Wood Green, and Tottenham, most disastrous in its effects to the garden crops and glass erections of all kinds in the district just named. The storm, as is usual when such takes place during the summer, was accompanied by heavy thunder and lightning, as well as by a very strong wind from the north-west; to this was added the destructive force of the immense pieces of ice, for such they were, with which the hail was intermixed, but quite distinct in appearance, transparent as glass, irregular in shape, and varying in size from that of a Cobnut to an ordinary hen's egg. Some conception of the force with which they fell will be formed when we state that Plums, which are yet as hard as they can be, were bruised right to the stone, and a good portion, especially on west walls, knocked off; Apples the same. In addition to the damage done to fruit, Onions have two or three of the outside scaly layers of the bulbs bruised right through; the leaves of Cabbages and Seakale are completely riddled, the hard leaf-stalks of the latter being broken. Even the haulm of Asparagus now become woody where laid in a horizontal position, was in some cases completely severed; where it stood upright and less exposed to the direct force of the falling ice, the bark was abrased, leaving the white inside fibre bare. The ground was thickly strewn with the hard leaves and current season's shoots of such trees as the Oak. The breakage of glass, as may be imagined, is a very serious affair, erpecially to the nurserymen and market gardeners, who suffered seriously in this way, as well as by the destruction of their crops.

T. Baines.

—— The hail-storm which we had on Sunday night lasted from twelve to fifteen minutes, but in that short time it did an immense amount of mischief. It came in a north-west direction, smashing thousands of panes of glass in all directions; some of the hail-stones were as large as a Walnut, weighing from ½ oz. to 1 oz. each, which were hurled by the hurricane with great force against every object in their way, smashing the windows in every house that faced the storm, and cutting up nearly the whole of the vegetation in their track. The ground was covered with ice 2 in. in depth, and where obstructed from 24 in. to 30 in., which in places lay till Monday mid-day. The loss of glass alone must be calculated by hundreds of thousands of feet, and will fall very heavily upon some horticulturists, especially where the houses were filled with plants. The establishment of Mr. Rochfort is a complete wreck, house after house with hardly a pane left, filled with Maiden-hair Fern, Ficus, and other decorative plants ready for market, now made only fit for the rubbish-heap. Mr. Day, the great Orchid grower at Tottenham, must have sustained a heavy loss; the blinding shower of hail-stones as large as pigeon's eggs, and glass shivered into fragments, will soon work great havoc among such choice subjects as he grows. In the open ground, too, the loss is very great; market gardeners are ploughing in their crops owing to their being rendered entirely useless. The Vegetable Marrows look as though they had passed through a wringing machine; Lettuces, Onions, Cabbages, &c., are cut up into fragments, while Potatoes have the appearance of being nibbled by some animal. Among hardy plants the havoc is equally great. At the Hale Farm Nurseries eighty out of every hundred panes of glass are smashed, and thousands of plants, to all appearance, are ruined. Lilies have suffered fearfully, beds of the tigrinum section are rendered almost leafless, and without a perfect bud being left on them. Plants of L. auratum, in their glory, and surprising every one with their beauty, are now a complete wreck, the flowers and buds are withered, and the stems stripped of their foliage, bruised and broken. Of other Lilies, the rare and lovely L. Krameri (japonicum), L. Leichtlini, L. Maximowiczi, the true L. eximium, L. neilgherriense, and a number of others, now lie mangled and withering in the sun; while the more robust stems of L. Humboldti, occidentale, and Robinsonianum stand like gaunt spectres mourning the loss of their brethren. Among herbaceous plants the damage is equally great, both in pots and in the open ground; Roses, fruits, and, in fact, everything has suffered more or less.—A. J. P., *Tottenham.*

Dead Trees in the Regent's Park.—A good many trees have perished this year on the north side of the Regent's Park, owing to a quantity of soil being heaped over their roots. This and similar cases should act as a caution.

Azorean Forget-me-not (Myosotis azorica).

Rock Tunica (T. Saxifraga).

Veined Verbena (V. venosa).

Alpine Eryngo (Eryngium alpinum).

Round-leaved Rest-harrow (Ononis rotundifolia).

Double Bindweed (Calystegia pubescens fl.-pl.).

Carnation (Dianthus Caryophyllus fl.-pl.).

Gladiolus gandavensis hybridus.

Foxglove Pentstemon (P. Digitalis).

Bell-flowered Pentstemon (P. campanulatus).

Great American Lily (Lilium superbum).

Smooth Helenium (H. autumnale).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

ROCK CYCLAMENS.

The Cyclamens seldom venture high on the Alps, but they are nevertheless true mountaineers. They more frequently occur on the stony slopes of the Mediterranean basin, but are also not uncommon among the stony slopes near the high pastures in Piedmont and various other parts of Italy. Those fortunate enough to have seen the flora of these regions in early summer will remember the beauty of the Cyclamen flowers as much as that of Gentians and high-coloured Alpine Primroses. We are so much accustomed to see the bright flowers of the Persian Cyclamens in our greenhouses that many never think of Cyclamens as hardy flowers. They are, however, excepting the Persian one, as hardy as Primroses; but they love the shelter and shade of low bushes or hill copses, where they may nestle and bloom in security. That they are hardy is not a reason why they should thrive in a bare exposed border. In such places as they naturally inhabit there is usually the friendly shelter of Grasses or branchlets about them, so that the large and handsome leaves are not so exposed that they are torn to pieces by wind or hail. Thus, for example, the Ivy-leaved Cyclamen is in full leaf throughout the winter and early spring, and for the sake of the beauty of the leaves alone it is desirable so to place the plants that they may be saved from injury. By acting on these considerations it is easy enough to naturalise the hardier kinds of Cyclamen in many parts of the country. Good drainage is necessary for the successful culture of Cyclamens in the open air. The species grow naturally among broken rocks and stones mixed with vegetable soil, grit, &c., and are therefore not liable to be surrounded by stagnant water. Mr. Atkins, of Painswick, who has paid much attention to the culture of Cyclamens, and has succeeded with them in a very remarkable degree, thinks that the tuber should in all cases be buried beneath the surface of the earth and not exposed, as in the case of the Persian Cyclamens grown in pots. His chief reason for this opinion is that in some species the roots issue from the upper surface of the tuber only. They enjoy plenty of moisture at the root at all seasons; they thrive best in a rich, friable, open soil, with plenty of well-decayed vegetable matter in it. They are all admirably adapted for the rock garden, enjoying warm, sheltered nooks, partial shade and shelter from dry, cutting winds. They may be grown on any aspect if the essential conditions above-mentioned be secured for them, but an eastern or south-eastern aspect is best, always provided there is partial shade. V.

SEA-SHORE PLANTS IN FIFESHIRE.

During a recent visit to Pettycur, a small village situated on the north shore of the Firth of Forth, and about two-and-a-half miles to the east of Burntisland, I took a stroll round its outskirts, and could not help admiring the wild garden scenery which at every turn presented itself. It will be needless to give a list of all the plants observed during my short excursion; suffice it to say, that all the plants noticed were growing in a wild condition by the road-side, on sloping banks, facing both south and west. Along the south-east side, and bordering the grassy rocks close to the sea, the plants which we usually get in such situations were seen in greater or less abundance. They consisted of Silene maritima, Armeria maritima, Cakile maritima, Plantago maritima, and P. Coronopus, Cochlearia maritima, Lotus corniculatus, Wild Thyme, &c. Along the north side of the road, at this particular place, the native plants usually seen in similar localities, but not exactly on the sea-shore, presented a rich appearance, probably owing much to the original shelving cutting of the rock being partially covered with soil from the cultivated lands above. The colours of the flowers in many places were much intermingled, and the effect produced was often harmonious and truly pleasing. Perhaps at no season of the year could the wild plants in this locality be seen in greater perfection, being often in large massy groups, as if emanating from fixed centres. Here I observed Silene inflata and S. maritima, Salvia Verbenaca, Echium vulgare, Convolvulus Sepium and C. arvensis, Ononis arvensis, Reseda luteola, Geranium pratense and G. sanguineum, Malva sylvestris and M. rotundifolia, Galium verum, Anthyllis vulneraria, Astragalus hypoglottis, Lathyrus pratensis, Trifolium procumbens, T. minus, Lotus major and other species, Erodium cicutarium, Hieracium Pilosella, Sedum acre, Hordeum murinum, Chrysanthemum leucanthemum and C. segetum, also numerous Grasses and Pteris aquilina. On some of the dry banks numerous seed-pods were observed of Primula veris and P. elatior, also of Thlaspi arvense. This "Little Honesty" had in some places a very peculiar appearance from its abundance, the heads being of a yellowish-green colour. Along the south-west shore many of the plants growing on the lower flats were similar to those just mentioned as observed on the south-eastern side. The ground behind, particularly on the south-west exposure, is hilly, naturally of a sandy, sea-side pasture, where the banks had never been disturbed. On some of the sloping pasture-land, which is by no means extensive, portions were literally carpeted with dwarf, flowering, herbaceous plants, whose colours in many places were somewhat marvellous, each variety varying in extent, and in some situations prettily intermixed. On one spot about 4 ft. 6 in. I counted fourteen varieties in full flower, and on one square foot of this space about sixty heads of flower, a considerable number being made up of Wild Thyme. The ground being sandy, none of the plants exceeded 2½ in. in height. The plants enumerated on the larger portion of ground were as follows:—Lotus corniculatus, yellow and orange; Trifolium procumbens, T. minus, Medicago lupulina, Thymus serpyllum, Helianthemum vulgare, Veronica chamædrys, Silene maritima, Anthyllis vulneraria, Ononis arvensis, Sedum acre, Carex arenaria, and Kœhleria cristata. Notwithstanding that the plants here stated are noticed as growing in given spaces, if the journey be extended to the East, the face of the sloping banks in one particular situation is literally studded with rich, flowering spikes of the Campanula glomerata, many hundreds being now in full bloom, as well as the chief plants previously mentioned as seen in this direction. The Convolvulus Sepium and C. arvensis are here seen in great profusion; the former in full flower hangs in rich festoons down the edges of the banks; and while extending one's journey to the west beyond the previous limits, besides the plants previously mentioned, large hemispherical shrubs of white and pink Wild Roses were abundant, from 18 ft. to 20 ft. in circumference, and 8 ft. in height; Brambles in large rounded masses were also covered with white flowers. In a marine villa, which stands on a somewhat projecting rock close to the sea-shore, the tables were adorned with flowers picked from the wild plants in the neighbourhood; these consisted of red and white single Roses in various stages, and also of the choicest of the plants formerly mentioned, associated with native Grasses and Ferns. The simplicity of a bouquet of wild flowers, as here arranged, seemed more pleasing to the eye than many table bouquets usually seen where cultivated double flowers generally predominate. J. M'Nab.

Royal Botanic Garden, Edinburgh.

THE ALPINE ROSE.

The dwarf Rhododendrons of the Alps are frequently called Alpine Roses, but we have a true and very beautiful Rosa alpina to which the name belongs by right. The Alpine Rose (R. alpina), in its ordinary form, attains to the size of a stout bush, but this diminutive Pyrenean form is so small that it may be associated with the choicest high Alpine flowers in the rock garden. Its culture in gritty, open soil, is very easy. The hills in nearly all the northern and temperate regions of the earth are adorned with beautiful wild Roses in numerous forms, but these, especially in our gardens, grow too large. Here, however, we may say a word in favour of their culture. It is not likely that they will become popular, nor, perhaps, is it desirable; but it is very much to be desired that intelligent amateurs would now and then take an interest in little grown and little known families such as the wild Roses. They are as easily grown as hedge-row plants. It would be well if we had a more frequent opportunity of enjoying them in our gardens. Finally, many species not yet in gardens at all will prove of great value as ornaments, and no doubt wholly distinct new races of double Roses are yet to be won from the wild kinds. R.

Yucca angustifolia in flower in Devon.—I have this Yucca now in bloom, and a lovely plant it is. I have admired it for years but this is the first season in which it has bloomed. My old friend Mr. Anderson, of Chelsea, gave me the plant in February, 1842! He said it was Y. angustifolia, which I believe it is. —H. F. Ellacombe, *Clyst St. George, Topsham.*

FLOWERING CANNAS.

Few flowering fine-foliaged plants rival Cannas when well grown for summer bedding. Some of the varieties have the habit and much of the leaf beauty of the stove Marantas, while others rival the Gladiolus in the beauty of their flowers. The varieties of Canna iridiflora (one of the best of the flowering species) should find a place in all gardens during the summer months where their brilliant flowers and cool sedge-like foliage form a good contrast, but in order to be perfectly successful in

Canna in flower.

their culture a deep rich bed should be prepared for them in a sheltered position. After they have done blooming they may be cut down and the roots placed in sand in a frost-proof cellar or shed. Thus treated, they keep fresh and start into growth strongly the following spring. Some of the best flowering kinds are Premice de Nice, clear lemon-yellow; Van Houttei, bright orange-red; Bihorelli, orange-scarlet; Gustave Bonnett, orange-scarlet; Mulleri, crimson; grandiflora floribunda, orange; compacta, yellow, spotted with red; Ferrandi, bright crimson; lutescens, yellow; Imperator, scarlet, spotted with orange; Ernest Benary, orange-red; picturata fastuosa, light yellow, spotted with red: Rendatleri, orange-buff; Deputé Henon, yellow, shaded with rosy red; Sénateur Chereau, yellow, spotted with red; and iridiflora, crimson. Numerous beautiful seminal varieties of the last named kinds have been raised by M. Jean Sisley and other growers at Lyons and Nice, and these will doubtless prove good additions to existing varieties. B.

M. CHATE ON WALLFLOWERS.

Wallflowers may be divided into three classes—the Common Yellow, single kind; the Shrubby Yellow, a double variety; and the Large Hybrid Wallflower, obtained by crossing the two first-named sorts. The latter is sufficiently constant in its habit to merit the name of a new species, producing, as it does, several distinct varieties, both single and double.

Common Yellow Wallflower.—This should be sown in March (where the soil is somewhat heavy) up to June in well-worked land. The young plants should be pricked out into the open ground 6 in. or 7 in. apart every way, so that they need not be disturbed until October, when a trench must be dug of a depth equal to the height of the plants, so that they need only be covered with dry leaves or straw when the weather is very severe. In March they should be transplanted to the places they are ultimately to occupy. They thrive well in almost any description of soil.

The Shrubby Yellow Double Wallflower.—As few of the Double Wallflowers yield seed, they are generally propagated by cuttings put in from March to July. They should be placed under a hand-glass or a frame, and pricked out into the open ground, and potted before very cold weather sets in.

The Hybrid Double and Single Wallflower.—This variety surpasses the preceding in beauty, the branches being covered with thick masses of flowers, which yield seeds. They remain in bloom for a long time, and are divided into fifteen varieties.

Although Wallflowers are comparatively hardy, they succeed best under glass in winter, but they must not be too much crowded together, as they are apt to become mildewed. Double-flowering plants are more liable to this malady than the others, their leaves being thicker and fleshier. The tendency to become double in the case of the Wallflower is so strong, that even among single ones we continually find flowers with more than four petals. When gathering seed those plants should be chosen which exhibit this tendency in the highest degree. They can also be propagated by cuttings as already described. Plants grown from seed are hardier than those grown from cuttings, besides which they bloom more abundantly and longer. They must be taken out of the frame and planted in the open ground in the month of March. They are of three kinds—pyramidal, intermediate, and dwarf. The following are the principal varieties:—Dark brown pyramidal, light brown pyramidal, deep yellow, pale yellow, dark blue, yellow edged with violet, purple edged with yellow, claret colour, nankeen, bronze, violet dwarf, violet pyramidal, light purple, coffee colour, and the tall, yellow tree Wallflower.

Position and Preparation of the Ground.

The ground for growing Wallflowers should, if possible, have an eastern aspect, and should be cleared and dug to the depth of about 1 ft. a month or six weeks before sowing time. When the time for sowing arrives, the ground should receive a second digging, but only to half the former depth, after which it should be dressed with a layer of well-rotted manure, which should be turned in with a fork. The ground thus prepared should be divided into beds about 4 ft. 6 in. wide, which will be the most convenient size for the frames with which they are afterwards to be covered. This method of preparing the ground applies more especially to those varieties of Wallflower which are sown in April and October. Further on we shall treat of the varieties which should be sown in open quarters.

Sowing.—The ground being ready, a quantity of seed should be taken (at least double the amount required for the coming crop) and sown broadcast rather thinly, so that the young plants may have plenty of room to develop. This method of sowing has two advantages:—The first is, that the young

plants grow more easily and become strong at an earlier date than if sown thickly; this early vigour has a great influence on the ultimate growth of the plants, and on the perfection of their shape. Secondly, the choice of plants for seed and cuttings is rendered much easier, each plant showing its distinctive character with much greater clearness. The vigorous plants from these sowings are rarely attacked by the white blight, which is frequently found on those grown from thick sowings; in fact, in this case we may quote the old French gardener's proverb, "Sow thinly and reap thickly; sow thickly and reap thinly." The seed should be covered over with a thin layer of well-rotted manure and watered with a fine rose. The ground should now be covered with lights, supported on pots or posts to about 4½ in. in height in front, and 1 in. or 1½ in. higher behind, so that the young plants can have plenty of air and yet be protected from the cold. This precaution recommends itself both by its simplicity and effectiveness. The natural habitat of Wallflowers shows that they cannot stand damp and require plenty of air, two essential conditions which are fulfilled by the above contrivance. Those who grow Wallflowers under glass place their frames in such a position that they receive the direct rays of the sun on them, by which means the young plants receive a sufficient amount of heat in the most economical manner. This position of the frames, although excellent in spring, would in summer be extremely hurtful to seedlings or young plants. The frames should therefore be reversed, otherwise the plants will be burnt up. When the heat is very strong it is as well to cover the frames with matting or blinds, which are removed in the evening; when the nights are not too cold the frames may be kept open so as to give the young plants the benefit of the fresh air and dew. This may be done at all times, from germination until the plant has developed its first leaves, when the frames may be taken away altogether, except the weather be rainy; if, during the first period of growth, the soil should become too dry, the beds may be lightly watered in the evening with a very fine rose. The great thing is to give the young plants all the air that is possible, taking care to keep them covered with the frame to protect them against the damp which in our climate is inherent in the atmosphere during the spring and early summer months. They should, in fact, be treated as flowers growing in the open air whenever the weather permits.

Planting.—After having prepared the ground as directed, it should be made smooth by being pressed with a board provided with a handle. When the young plants are seven or eight weeks old, they are fit for transplanting. The tallest should be selected and transplanted in lines, each plant being from 2 in. to 3½ in. from the other in every direction. The finest plants, be it understood, are always those amongst which the greatest number of doubles is to be found, and, by a careful selection in the first instance, a great deal of loss is avoided. Transplanting, then, is a very important operation, requiring no ordinary care and knowledge. Transplanting being finished, the beds are lightly watered with a fine rose, and the frames should be replaced and covered with matting or screens. If the weather be very fine and dry, the frames may be removed during the night only, in order to give the plants the advantage of the night air and dew. This treatment should be continued for a week, at the end of which the young plants ought to be thoroughly established; and if the weather be favourable the frames may be taken away altogether, or at any rate left close by the beds, so that in the event of rain they may be covered over, for it must never be forgotten that damp is the great enemy of Wallflowers, and the cause of most of the evils that attack them.

Diseases.

Spotting.—Wallflowers are very liable to this disease; it may be almost always stopped by moving the plant, with a good ball attached, to another part of the ground, prepared according to the directions given in the beginning of this article. This remedy generally succeeds when applied at the earliest stage of the malady. If it develop itself after the plants have been potted, they must be re-potted as soon as possible, in order to stop its progress. It is most essential not to wait to transplant or re-pot until the disease has gained strength; when once this is the case the cure is doubtful, and precautions are useless. The plants must be narrowly watched at first, for in the earlier stages of the disease its characteristics are barely perceptible, and are apt to escape the most scrutinising eye. The following general observations should receive attention:—Sowings made in heat are more tender and sensitive than those made in the open ground; the flowers are not so highly coloured, the foliage is lighter, and the whole plant is more liable to spotting, mould, and other diseases. It is only healthy and vigorous plants that should be re-potted, by which means the number of sickly plants at the end of the winter is diminished to a minimum. The damp months of December and January do an immense amount of mischief in the way of inducing spotting, which specially attacks sickly and badly-grown plants.

The Cabbage fly, which, as every one knows, is partial to the Crucifer family, is particularly fond of Wallflowers; it makes its appearance mostly during very dry summers. It is easily recognised by its reddish-black metallic hue; when approached it leaps like a flea. The only means of keeping this pest away seems to be to have the plants continually covered with the frames, leaving the sides open, and the paths in the vicinity of the beds constantly damp. Having covered the plants over with the frames, a glass should be introduced containing bi-sulphide of carbon, a thin transparent fluid giving off a nauseous vapour which gradually evaporates, and either drives out or kills the insects; the sides should then be closed with boards. The tick also attacks the plants when young, and is liable to do a good deal of damage if not destroyed. The same precautions may be taken as those which we have just described.

Potting.

Wallflowers to be kept through the winter should be potted between September 15 and October 15. If delayed beyond the last-named period, the plants will not have established themselves sufficiently to resist the cold weather. The earth for potting should not be sifted, being liable to cake when put into the pots, and so prevent the roots of the plants from freely developing themselves, besides having a tendency to retain too much water. When the compost is made the small stones should be picked out, and, with the superfluous roots, used for crocking, so that the water may have proper means of escape in damp weather. The most favourable time for potting is when the weather is dull. Having repotted all the plants, they should be placed in frames facing the east, taking care not to crowd them together. The plants should be carefully examined day by day and water given to those which show signs of becoming too dry. The frames may be taken off at the end of a fortnight, by which time the plants ought to have become perfectly established. In rainy weather, whenever there is any fear of frost, the frames must be replaced. A month after potting the dead and yellow leaves should be picked off. During the winter the operation should be repeated, choosing a fine day for the purpose, and watering the plants as they require it. When the weather is favourable the frames ought to be opened every day, and on sunshiny days they may be taken away altogether. The frames should never be raised when it is foggy, as the damp is apt to become condensed on the leaves of the plants, and is very difficult of removal. The white mould, of which we have already spoken, should be looked for during the first warm days of February. It is also very prevalent when the snow is on the ground. When the snow has ceased to fall the frames should be swept, for if the plants be kept closely shut down a vapour will be created which will do as much harm to them as a heavy fog from the outside. Frost is another foe which must be guarded against by filling up the spaces between the frames with litter or dried leaves, level with the lights. At the head of each row a mound of earth should be raised of the same height as the frames. If these precautions be taken there will be no need to cover the glass with matting, except when the thermometer falls below zero. These precautions must be especially observed in the month of February, when the plants are particularly delicate and sensitive to frost. At the beginning of this month a few waterings should be given to those plants whose leaves look faded. As soon as

they begin to bud they must be watered somewhat oftener, but sparingly. Beginning from February 15, very frequent waterings may be dispensed with by plunging the pots in the earth of the frames if it be sandy, or by surrounding them with sand and compost if the soil be heavy and compact. Plunged in a stiff soil the drainage of the pots would be interfered with, and the plants would be injured. This operation should always be performed during the sunny days of March, and will be found to be the best method of resisting drought. Towards the end of March, or later, if the weather be too cold, Wallflowers may be planted out. These directions, it need hardly be remarked, only apply to places where they perish in winter in the open air.

A HARDY FERN.

(ASPIDIUM ACULEATUM.)

Of this, one of the hardiest and most effective of all our native Ferns, numerous forms occur in various parts of the world.

Aspidium aculeatum.

Bentham says it is found from the Mediterranean to Scandinavia, extending eastward into Central Asia; in North and South America, and generally in the Southern Hemisphere. Our illustration shows the elegant contour of the plant, and if grown in a shaded situation, it retains its fronds nearly all the winter. In deep, rich soils its handsome, dark green fronds attain a height of from 2 ft. to 3 ft., and wherever moist dells in the wild or rock garden have to be furnished, this plant is well worth a place. It also forms one of the very best of all hardy Ferns for pot culture in rooms or windows, retaining its stout fronds until the young ones shoot up in the spring, and only requiring to be sprinkled or syringed now and then, in order to remove dust and other impurities. This Aspidium may be seen in the Fernery and wild garden attached to South Kensington Museum. B.

ALPINE SILENES.

A very extensive genus in northern, temperate, and arctic regions, including some of our most beautiful Alpine flowers. There is the Cushion Pink (Silene acaulis), tufted into dwarf, light green masses, like a wide-spreading Moss, enduring the fiercest storms, snows, and arctic cold of numerous mountain climes in northern regions of the globe, from the White Mountains of New Hampshire to the Pic du Midi in the Pyrenees, carpeting among the rest the higher mountains of Britain and Ireland; there is the Alpine Catchfly (S. alpestris), with its close carpet of shining leaves, and numerous, pure white, star-like flowers in early summer; there is the rare and showy Silene Elizabethæ, a remarkably beautiful, and as yet very rare, Alpine plant from the Tyrol and North Italy, quite distinct from all its brethren, the flowers looking more like those of a handsome but diminutive Clarkia than those of the commonly-grown Silenes; there is, too, the Pigmy Catchfly (Silene Pumilio), a rare and interesting species from the Tyrol, resembling the Cushion Pink of our own mountains in its dwarf, firm tufts of shining green leaves, and bearing much larger and handsomer rose-coloured flowers scarcely more than an inch above the flat mass of leaves, so that the whole plant seldom attains a height of more than between 2 in. or 3 in.; and, lastly, among the finest of the showy dwarf species, we have the Caucasian Silene Schafta. All the Alpine Silenes are of easy culture; rare kinds, however, like S. Elizabethæ and S. pumilio, should be carefully treated till more plentiful. They should be planted in deep sandy loam on a well-drained and thoroughly exposed spot, sufficiently moist in summer, facing the south, a few stones being placed round the necks of the young plants, to keep them firm and prevent evaporation. Afterwards they will take care of themselves. V.

Alpine Plants at Hitherwood, Sydenham.—Among Alpine and other plants now in flower here many are well worthy of notice; for instance, among Begonias we have that most beautiful and rarest of all its kind, B. Veitchii, in blossom; it has widely expanded, broad green leaves, and beautiful crimson flowers, of which from two to four are borne on a stem; also B. intermedia and the yellow-blossomed B. Pearcei. Campanulas, too, must not be overlooked; among these we have C. gummifera, a continuous-blooming kind with lilac flowers, borne on stems 18 in. in height; the foliage is also worthy of notice, being of a fine glaucous colour; C. Raineri, now in fine condition, has flowers not unlike those of C. Barrelieri, only much larger and darker; also C. Hosti and its white variety, the latter a charming plant. Among the dwarf kinds C. alpina, too, is very fine, as is also the rare C. Waldsteiniana, and a kind that grows not more than 1½ in. in height, and bears dense masses of beautiful lavender flowers, which well deserve all the praise one can bestow on it; C. Langsdorffiana, too, is a showy kind, with purplish-lilac flowers. Among other plants in bloom may be named Gentiana gelida, a kind equalled by few and surpassed by none, it bears clusters of dark blue flowers, closely set on spikes about a foot in height; also G. Pneumonanthe, a lighter variety than the preceding, and Wahlenbergia (Campanula) hederacea, a fine plant which bears masses of pale blue flowers, and which appears to succeed best in peaty soil, partially shaded. Podophyllum Emodi has nearly ripened fruit with us; it is bright vermilion-red in colour, and egg-shaped; it measures from 4 to 5 in. in circumference, and nearly 4 in. in length. Of Lilies, we have several now in bloom; also Funkia Fortunei variegata, an exceedingly good kind, which bears stately spikes of white wax-like flowers; also the pretty yellow-flowered Saxifraga Hirculus. Alstrœmeria aurea, too, makes a very desirable border plant, and on rocks or walls Linaria alpina has a good appearance, also the beautiful blue-flowered Cyananthus lobata, the pink Androsace lanuginosa, and Sedum dasyphyllum majus; near a pond grows the stately Lythrum roseum superbum, extending high its branching spikes of rose-coloured flowers. Foxgloves have been plentiful, but they are now nearly over. I may add that our Campanula pumila and its white variety are very fine.—E. Jenkins.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Canterbury Bells at Borrowash.—In the nursery of Messrs. Barron & Son, at Borrowash, these form an edging to one of the main walks, and being now in full flower, are very effective. They consist, for the most part, of the white variety, intermixed here and there with the blue kind, which adds to their beauty. Nothing in their way could be finer than these now are as seen from the road in passing.—M.

Partial Shade for Hardy Flowers.—It would be a good plan in gardens where hardy flowers that bloom during the hottest part of summer are much grown to make a few beds for them in partial shade. In large gardens it is generally easy to secure this, the contents of such beds escaping the general scorching which in very hot weather befal plants fully exposed.—V.

Phlox Drummondi and its Varieties.—Cut blooms of this fine annual were shown in large variety at the recent Ealing Flower Show, by several exhibitors. The colours of some of the specimens were singularly beautiful—one, a rich bluish-purple, being specially noticeable. Promoters of summer flower shows might do much in this way to encourage the cultivation of the better kinds of annuals, and add, at the same time, a novel feature to their shows.—D.

Flower Beds at Rollisson's Nursery.—There are some graceful small beds of flowers here, each with a Yucca, Agave, or some other fine-leaved plant in the centre. The effect is very good as seen from the Tooting Road. When "bedding out," to use an unfortunate term, is tastefully done in this way there is of course no difference between it and various kinds of artistic gardening.

Parker's Deep Rose Everlasting Pea.—Lathyrus latifolius splendens is the technical name of a very handsome hardy flower which every one who cares about the finest kinds will in good time possess. It was, we believe, raised in Mr. Parker's nursery at Tooting. Like its kind it is difficult to increase, not always coming true from seed; but, nevertheless, there is already a fair stock of it obtainable.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Pelargoniums that were placed in the open air to ripen their wood, as recently recommended, will now be in a fit state for heading down, an operation which should be done at once, as their ability to flower early next spring depends much upon the time at which they are cut down. No plant with its roots confined in a pot should ever have its head removed without first allowing the soil to get as dry as it will bear without injury; for when the leaves, which are its evaporating surface, are removed, it has not the power to throw off the moisture absorbed by the roots, a circumstance considerably aggravated if the soil be wet at the time when the plant is headed down, a condition which causes the roots inevitably to perish. Hence the necessity for allowing the soil to become dry, more or less according to the nature of the plant to be operated upon before removing its top; it is necessary to be more careful in this matter in the case of Pelargoniums than in that of most plants, as they are more impatient of their roots being in soil that is too wet than the generality of plants in cultivation. After they are headed down place them in a cold pit or ordinary garden frame in a sunny situation, put the lights on, but tilt them in the daytime in order to admit air, closing them in the afternoon whilst the sun is on the glass, syringing them freely overhead at the same time, which will be all the water they will require until they have broken into growth afresh.

Fuchsias.—A portion of the plants that flowered earliest may now with advantage be placed for ten days or so in the open air, during which time they should receive only just enough water to prevent them from flagging. If after this their side branches are cut in to four or five joints, the leading shoot being shortened proportionately, and they are then put in a house or pit, where the atmosphere can be kept a little close and moist by freely damping the floor, closing the lights in good time in the afternoon, and syringing overhead, they will quickly throw out fresh shoots that will bloom freely all through the autum; and to assist them to do that they should have weak manure-water applied once or twice a week.

Cassia corymbosa is a plant that should be grown by amateurs; it is easily managed, and will keep on producing its yellow blossoms from August to October. Young plants of it potted in spring, and well attended to since that time, will now be setting their flowers, and as these are produced from the extremities of the shoots, there must be no further stopping, except in the case of any that it is deemed more desirable to grow on than to permit to bloom. Keep them well up to the glass, so as to promote a bushy, compact growth.

Late-flowering Lilies of the lancifolium section will now have formed their flowers, and have filled their pots with roots. Where there are many bulbs in a pot the soil naturally becomes exhausted, and unless from this time onwards they are regularly supplied with manure-water, the bottom leaves will turn yellow, and fall off long before the flowering is over, a circumstance which gives them an unsightly appearance. Where a number of these useful decorative plants are grown, their season of blooming may be much prolonged by placing a portion at the north side of a wall now, where they will not receive much sun. When the flowers are visible this will not have any effect upon drawing them up weakly, provided they are set where they will get plenty of light; keep them well tied out so as to admit light to the inside leaves. If aphides make their appearance upon them they should be immediately thoroughly syringed with Tobacco or Quassia-water, laying them down on their sides for the purpose, for if the aphides be allowed to remain on them, they will destroy the leaves in a very short time. One of the first essentials of successful Lily culture is to maintain the leaves in a healthy state as long as possible. The number of flowers produced by pot Lilies is generally not more than half the quantity which they would bear were the treatment such as they require.

Tritonia aurea is a very suitable orange-flowered plant for amateurs, as it is easily grown and a remarkably free bloomer, producing its flowers in the autumn when there is not much in the greenhouse; it also possesses the advantage of occupying little space in winter, as when the tops have died down the pots which contain the roots can be stowed away under a greenhouse shelf or any similar situation free from frost. The flowering of this plant can also be retarded if required by keeping it on the north side of a wall, but wherever it is placed it should be set upon a good bed of ashes, where slugs are unable to harbour, as I know of no plant for which they have a greater liking than this; if only one or two small slugs get concealed about a pot of it they will in a few days completely disfigure the leaves. It increases fast, and looks the best with from a dozen to a score of bulbs in a 10-in. or 12-in. pot.

Anomatheca cruenta is also a very desirable plant, particularly for those who have not much greenhouse accommodation. It will succeed well under treatment similar to that just recorded; both this and the Tritonia are benefited by the use of manure water, and both are hardy, so that where there are more of them than required for pot culture they may be planted out on a sheltered border where the soil is tolerably light.

Flower Garden and Pleasure Ground.—The extremely hot weather which we have had has necessitated a liberal application of water, especially where the subsoil is of a porous nature, the continued use of which produces a crust on the surface of the soil almost impervious to water; this is somewhat difficult to deal with amongst this description of plants, from their being planted close, and the roots of many so near the surface; but if only an inch of the top can be stirred with a planting trowel, or any similar implement, the object will be gained. Where the surface has been mulched with Cocoa-nut fibre, or an inch of dry, rotten manure that has been passed through a half-inch riddle, the advantage will be seen in the better growth which the plants will have made, the less water required, and the less baked condition of the soil. Lobelia seeds should be picked as fast as they appear, or the plants will not hold out flowering until autumn. Any Pelargoniums that produce seed-pods freely, such as the old pink variety Christine, must have them regularly taken off, or the blooming will be much reduced. Such plants as Humea elegans, Cannas, Castor-oil plant, Wigandias, and other large-leaved subjects must have abundance of water given them when the weather is dry, or they will soon get unsightly; and if the soil is at all poor liquid manure will help them. Where Yuccas, Agaves, or Palms in pots are plunged in beds out-of-doors, care must be taken that they do not suffer from want of water; this is especially necessary when the pots are plunged so deep as to be below the surface in such a way that the dry condition of the soil in them cannot be readily seen. Many kinds of Yuccas are now beautifully in flower, and when properly placed are very effective. Among others one called Y. angustifolia is exceedingly pretty, being a profuse flowerer, and dwarf and compact in habit.

Evergreen hedges that are kept annually trimmed, should now be clipped; it will have been necessary to defer this work longer this season than usual, on account of the growth being later than ordinary. Evergreen hedges should never be cut until the summer's growth is completed, which is easily seen by the shoots ceasing to extend further, and the leaves at the extremities attaining their full size and solidity. When cut too early a second growth is made, necessitating a second cutting in the autumn or winter, which tends to increase the weakening influence inseparable from all restriction of growth in the way practised with hedges confined within the usual limits. The management of hedges is often worse than anything connected with a garden. When, as is usual, it is necessary to keep a hedge cut within certain limits as regards height and breadth, the work should be carried out so as to leave it as even as a wall at the top. Nothing is more common in carrying out this kind of work with a hedge in which there are weak places, or where some portions have not attained the full size required than to see the operator cutting almost as much away from the weak places as he does from the strongest, overlooking the fact that cutting at all makes weak plants of any kind still weaker. There is also a great want of consideration as to the nature of the plants of which a hedge is composed. As a rule, it may be taken that the larger a plant grows if left to itself the less able will it be to bear being kept continually cut in close, yet all plants are not quite alike affected in this way; a Holly hedge will remain for a generation in a healthy state if kept trimmed in to 5 ft. or 6 ft. in height, and something less in diameter, provided it is widest at the bottom and tapers up to the top, so as to give the lower portion the advantage of light and air. The continued health of a hedge is more dependent upon the breadth to which it is allowed to grow than the height. A Yew hedge, for instance, will remain in health a long time when kept low if it be allowed sufficient width, whereas if permitted to grow to a height of 10 ft., and kept cut in very thin, the plants get so weak as to barely exist. Hedges consisting of any plant that is deciduous should never be cut in the summer, unless they are very strong, as the removal of the shoots before the leaves have fallen off weakens them very much. The boundary hedges, especially in small gardens, are very often spoilt by allowing deciduous trees to grow in them, the roots of which impoverish the soil, and the branches overhang to an extent that renders a healthy condition of the hedge impossible. In most gardens of limited extent a certain amount of privacy is desirable. There is nothing that will afford this and have such a pleasing effect as a close line of Holly allowed to grow upwards, the lower branches being permitted to extend with little cutting. Winter and summer it always looks well, and also affords excellent shelter.

Hardy Fernery.

The great heat which we have lately experienced has been anything but favourable to hardy Ferns, and unless well looked to and properly supplied with water, they will soon present a shabby appearance, as thrips are sure to attack them. Moisture-loving kinds, such as the different varieties of Athyriums and the majestic-looking Struthiopteris will be the first to suffer, and therefore, where these have not a cool damp soil afforded them to grow in, frequent and copious waterings will be necessary to keep them in health. These should be applied overhead, so as to thoroughly wet the fronds, or where that cannot conveniently be done the garden engine or syringe may be advantageously employed to give them a thorough wetting; if this can be done every night it will considerably prolong their freshness and beauty. Where bulbous plants and others of a semi-wild character are grown in suitable portions of the hardy Fernery, as they always should be, the less interference they receive in the way of trimming or removal of leaves, the greater will be their strength and capacity for blooming next year. It is a great mistake, for the sake of appearances, to denude such plants of their foliage, as is frequently the case long before it has died off and ceased to be useful, the effect being to stop the maturation of the bulb or crown of the plant, as the case may be, and prevent the formation of flowers.

Stove and Greenhouse Ferns.

The increased quantity of air necessitated by the bright weather which we are having soon renders the atmosphere of Fern-houses much too dry for the occupants, unless means be taken to counteract its effects by frequently damping every part of the interior of the house available for the purpose. Much watchfulness will likewise be required to see that they do not suffer from want of water at the roots, so rapidly does evaporation go on directly the sashes or ventilators are thrown open for the purpose of lowering the temperature. During such weather as the present it is almost impossible to keep Ferns too wet at the roots, unless the drainage happens to be defective or the soil unsuitable, in either of which cases the evil should at once be rectified by repotting. Seedlings will now be in a sufficiently forward state to be pricked off into other pots or boxes to give them more room. In doing this they should be transferred in small tufts or patches, without any attempt to separate them singly, as this can be done more readily and with less check to the plants when they are larger and fit to pot off. After pricking them out they must be kept in a damp, shady situation, where they can be readily looked after and syringed. Most of the viviparous varieties will now be bearing a profusion of minute plants on their matured fronds, which, if pulled carefully off and inserted in sandy soil under a bell-glass or close propagating-box, will soon emit roots and form useful plants for decorative purposes. Ferns admit of ready increase in so many ways that there need be no difficulty in keeping up a stock of various sizes always available for use, for without any artificial sowing numbers of different kinds are always springing up amongst the soil or crevices where atmospheric conditions are favourable to their growth. The fronds being so much in request for cutting, it is necessary to make a selection of the most suitable kinds, and grow them specially for that purpose. This should be done by placing them well up to the glass in light airy positions, in order that they may come stout in texture, and be well hardened before being required for use. It is surprising the difference there is in the lasting properties of fronds thus treated and others that have been subjected to much shade, or grown in a close, moist atmosphere, under which conditions they are always thin and flimsy, and of no value for cutting, as they at once shrivel up when exposed to the air of a room. Even Adiantums, generally so short-lived when cut, may, by being grown in a light, airy house, be rendered much more useful than they usually are. Onychium lucidum is one of the most serviceable at this season, and stands cutting better than most others, on account of the rapid way in which it sends up fresh fronds, and the short time they are in coming to maturity. Their light, feathery appearance and pleasing, glossy green colour add much to their value; and as it is a Fern of such easy culture and almost hardy, it should not be omitted from even the choicest collection. Davallia tenuifolia greatly resembles this in its divisional aspect, and is altogether a very elegant variety, alike suitable for cutting or growing for table decoration, or planting out in the natural style on rockwork, for which purpose it is well adapted. Pteris serrulata, although looked upon by many as common, is one of the most elegant-habited of all Ferns, and one which is exceedingly valuable for dressing épergnes or tall flower-vases, where it droops over in the most graceful manner imaginable. Both this and the crested variety should be in every garden. The most finished appearance it is possible to give to tall vases or épergnes may be imparted by using such plants as the lovely Selaginella uncinata or the Lygodiums, such as scandens and palmata, without which no Fernery can be said to be complete. Where stove-heat can be afforded the very elegant Fern-leaved creeper, Cupania filicifolia, should find a place; and if it can be planted out near the glass in a nice light, airy position, it will afford a plentiful supply of gracefully drooping branches for cutting. If these be allowed to remain on the plants till the stems become firm, they last a long time in water, and may frequently be made to do duty with a fresh supply of flowers.—J. SHEPPARD, *Woolverstone Park.*

Orchids.

The grotesque-looking massive flowers of the Stanhopeas now in bloom in collections of Orchids induce me to make a few remarks respecting them. It is often said that Stanhopeas last in perfection only a few days, and the odour which they emit is too powerful to be pleasant, but against these objections it may be stated that they are so very free-flowering that if the individual blossoms last but a short time, even small plants usually produce a succession of flower-spikes, which keep them in bloom for a long time; and if a number of varieties be grown some of them will be in flower throughout the months of July, August, and September. It may also be added that they are not expensive to buy, and that they are easily grown. Most of the Stanhopeas are natives of Central America; they resemble each other so much in their habit of growth, and in the mode of pushing their flower-spikes downward from the base of the pseudo-bulb, that some authorities say there are but few species, and that the list is made up of varieties, but the marked difference in the colouring and formation of the flowers renders them amply distinct for all ordinary purposes. A few of the best kinds are S. eburnea, syn., S. grandiflora; flowers pure white with coloured markings in the centre; S. tigrina, yellow and white with heavy blotches and bands of claret on the sepals and petals; S. insignis, sepals and petals pale yellow, spotted with purplish-chocolate, lip and column white, spotted with purple; S. saccata, sepals and petals creamy-white spotted with chocolate, labellum same colour, with a singular-looking, inflated, orange-coloured pouch at the base; S. Wardii, sepals and petals yellow and orange, lip yellow, marked with purple at the base; S. oculata, flowers marked with conspicuous, eye-like dots in the centre, sepals and petals creamy-yellow, spotted with purple; S. Jenischiana, flowers pale orange, uniformly spotted with claret; S. Bucephalus, flowers orange, heavily marked with red blotches. Several other varieties might be enumerated, but enough have been mentioned to show that the class is an important one, and that any one undertaking their culture will certainly not be disappointed in them. All the varieties succeed best when grown in baskets suspended from the roof of the Orchid-house, and supplied with a mixture of one-half turfy peat and the other half Sphagnum Moss; they should be grown in a moist, airy house, in a temperature of from 70° to 75° during the day-time, and 60° to 65° at night, and rested after the growth is finished in a temperature of from not less than from 55° to 60°, during which time they should be kept dry. If grown in pots, the flower-spikes are often sent down through the soil into the crocks and lost; but if baskets be objected to, they may be grown in pots, but in that case they should be potted very high above the rim, care being taken that the pots be of the smallest possible size in proportion to the size of the plant.—JAMES O'BRIEN.

Kitchen Garden.

Until rain comes little can be done in this department beyond keeping down weeds by means of surface hoeing, and mulching and watering crops; get also all crops harvested that are in anything like a fit state for so doing. First early kinds of Potatoes are now quite ready to house, which should be done before rain comes, as the probabilities are that the Potato disease will then make its appearance. Autumn-sown Potato Onions, Shallots, and Garlic, are all ripe enough to be housed, and the present is a good time for this operation. As opportunity occurs get ground ready for the main crop of Winter Spinach, which should be sown the first week in August. This crop in most establishments is of the utmost importance; in order to avoid any mishap as regards it, select the warmest and driest position in the garden for it, and let the ground be deeply trenched and well manured. Sow in drills 18 in. asunder, and thin out the plants to 12 in. apart in the row; there will then be little danger of either rust or damping off. As soon as the crops of Peas and French and Broad Beans are exhausted, let them be cleared off, and the ground hoed and cleared of weeds, and drills drawn preparatory to planting Broccoli and other winter Greens. To dig the ground at this time of year for such crops is unnecessary, for all the Cabbage tribe do best when the ground is rather firm, particularly if it had been well drained for the former crops, which should always be the case. Planting before rain comes will be useless, for whatever amount of water can be given, it will be of little service so long as we have such hot sun-

shine. Strawberry plantations to be destroyed should be cut off with spades at the ground line and Broccoli afterwards planted between where the rows previously stood; the holes for these may be made with a crowbar, and filled in with a little fine soil. We always have the finest Broccoli from such ground, another proof that firm soil suits all such plants best. A good bed of Lettuce (Brown Cos) should be sown; make also another sowing of Endive, and the former sowing should be thinned out to 6 in. apart. Turnips for winter should also be got in as soon as we are favoured with a shower; and Early Horn Carrots must not be forgotten, as they are always highly prized in a young state. Cabbage seed, for the principal batch, should at once be sown; by the time they are ready the spring-sown Onions will be fit to harvest, and the ground they now occupy should be reserved for the Cabbages. Rosette Coleworts may be planted in any spare corner, and will furnish a dish of tender sprouts at a period when Broccoli and Cauliflowers are scarce; a supply of plants should always be kept on hand, and planted as opportunity and ground offer. Keep the growths of Ridge Cucumbers and Vegetable Marrows well thinned out, and look them over every day, for the purpose of cutting all fruit that are ready. The plants soon get worn out when the fruit is left on needlessly; abundance of water should be given them, and they should be soiled up when the roots are seen on the surface. The same remarks as to gathering the fruit betimes are also applicable to Tomatoes and Capsicums, and these, especially the former, will require all leaves and useless shoots that prevent the maturation of the fruit to be cut off.—W. Wildsmith, *Heckfield.*

NEW PLANTS, &c.

Tulipa Hageri.—A pretty little species from Greece, bearing crimson-yellow-backed flowers, each petal having a yellow-rayed, dark green blotch at its base. It was discovered by Dr. Von Heldreich in 1862 on the hills of the Parnes range in Attica, growing with T. orphanidea, at an elevation of 1600 ft. It has been flowered by Mr. Elwes, and also by the Rev. H. N. Ellacombe and the Rev. H. Harpur-Crewe. It deserves a place among hardy bulbs.—"Botanical Magazine," t. 6242.

Odontoglossum Hallii.—A very effective yellow-flowered, brown-blotched Orchid, from New Granada and Peru, evidently a large-flowered and more beautiful form of the better-known O. luteo-purpureum. In its native habitat it attains an altitude of from 6000 ft. to 8000 ft. The plant is now well known in gardens, having recently been exhibited in splendid condition by Messrs. Veitch & Son.—"Botanical Magazine," t. 6237.

Coreopsis maritima.—A Californian perennial, said only to be of annual duration in this country. It was discovered on maritime rocks by Nuttall in 1834, and introduced by him into American gardens. The leaves are finely cut, and the flowers, from 2 in. to 3 in. in diameter, are of a clear yellow colour.—"Botanical Magazine," t. 6241.

Phalænopsis Veitchii.—The rarest of all Phalænopsids, the only known specimen being that in Messrs. Veitch's collection at Chelsea. It is supposed to be a natural hybrid between P. rosea and P. Schilleriana, the flowers being like the first-named in shape and colour, but much larger in size, with a bilobed apex to the central lobe of the lip. Its affinity with P. Schilleriana is shown by the faint grey marbling on the dark green foliage. It is the most distinct of all intermediate Orchids, and, if more plentiful, would be a welcome addition to many collections.—"Floral Magazine," t. 213.

Cosmibuena obtusifolia var. latifolia.—A handsome rubiaceous tree from New Granada, where it attains a height of from 20 ft. to 30 ft., and bears large white delicately-fragrant flowers in terminal clusters. The plant has been grown in the Palm-house at Kew without flowering for a considerable time, but a cutting given to Mr. Howard, and placed in a stove, speedily flowered. It is not likely to be useful as a decorative shrub.—"Botanical Magazine," t. 6239.

Pescatoria lamellosa, a strong-growing yellow-flowered Orchid, bearing large solitary flowers, shaped like those of P. citrina, but with a more pronounced series of raised plates on the yellowish-white lip. It has been introduced by Mr. Bull and Messrs. Veitch, and was sent from New Granada by Mr. Wallis. It is an attractive garden plant, and one well worth a place in all good collections.—"Botanical Magazine," t. 6240.

Moricandia sonchifolia.—A showy-flowered Crucifer from Northern China, growing about a foot in height and bearing terminal and axillary spikes of lilac-purple flowers, each an inch in diameter. It was originally discovered by Professor Bunge, of Dorpat, who accompanied a Russian mission to Pekin from Siberia in 1831. It is a hardy annual, and well deserves careful culture.—"Botanical Magazine," t. 6243.

PLATE XXXI.

THE BEST OF THE ODONTOGLOSSUMS.

(WITH A COLOURED FIGURE OF O. ROEZLI).

By F. W. BURBIDGE.

Few groups of plants are more popular than these charming Alpine or rather Andean Orchids, for nearly all the species—and there are nearly a hundred—are found on the moist elevated mountain ranges of the great South American Continent, at elevations varying from 1000 or 2000 ft. to 9000 or 10,000 ft. above the sea-level; indeed, one species—O. nebulosum—obtains its specific title from its being found up among the moisture-laden clouds of the Cordilleras. All the species are pseudo-bulbous, the oblong fleshy bulbs being terminated by lance-shaped evergreen leaves, the flower-spikes being produced from the axils of the sheathing leaves at the base of the bulbs. These sheathing leaves seem to supply nourishment for the flower-spikes, and where they are most numerous, as in O. vexillarium and O. Warscewiczii, the flower-spikes are also most plentiful. This connection between the basal sheathing leaves and the flower-spikes is a very interesting and suggestive one. Most of the species will luxuriate in a cool house where the temperature does not fall below 40° in winter, and the nearer the temperature can be kept to 60° during the hot summer weather the better. An extra 10° in winter will not do them much harm if the atmosphere be kept moist, but heat in summer must be avoided by ample ventilation, shading, and a plentiful supply of moisture. Insects rarely trouble Odontoglossums, if they be kept cool and moist with frequent syringings during dry, hot weather. There are a few of the species which require a warmer temperature than the Odontoglossum-house proper—at least during the winter months, and these may be grown in a Cattleya or intermediate house, or even in a cool plant stove. This remark applies more particularly to the Miltonia-flowered and to the O. grande and O. citrosmum groups. When well grown, no Orchids are more enjoyable than these, and none can be cultivated at less expense, unless it be the hardy species.

The Odontoglossum-house.

A few words concerning this may be of service to those who are about to begin to grow Odontoglossums, and have no special convenience for so doing. Elaborate or expensive structures are not required, and no costly heating apparatus is requisite beyond the amount of hot-water pipe necessary to exclude frost from a common greenhouse; there will, therefore, be a saving in fuel and labour, compared with the expenses attending the culture of Orchids which can only be grown successfully in a close, humid stove. For the culture of Odontoglots, together with Masdevallias and Disas, I would recommend a small span-roofed or lean-to house; either will do, though a span-roofed one is, perhaps, the more convenient of the two, if a suitable site can be obtained. If a span-roofed house be decided upon, do not build it too large, say 12 ft. wide and 8 ft. high. This will be quite large enough to commence with, and will be more likely to give satisfaction than would a larger structure; the side walls should be 9 in. thick, and about 5 ft. or 5 ft. 6 in. above the ground-level, leaving spaces for ventilation, as shown in one of the annexed sections, which is a representation of the cool Orchid-house at Fernie-hurst. This gives 4 ft. for the side benches or tables, and 4 ft. for the path. Provision must be made for thorough ventilation, covering the side openings with perforated zinc or wire gauze so as to exclude cold currents of air or draughts. A house of these dimensions, and 40 ft. to 50 ft. in length, may be heated sufficiently for Odontoglossums by a flow and return pipe passing round it under the side-benches; or, in other words, a house in which these plants may be grown perfectly requires no more piping than is considered necessary for heating an ordinary greenhouse. The benches should be of slate, on supports of either iron or wood, the former being preferable on the score of durability. These benches should be covered either with Derbyshire spar or Cannel coal broken up into small nodules, upon which the pots should be arranged. Cannel coal always appears clean, and its dull dark colour is not at all conspicuous, while it efficiently answers every

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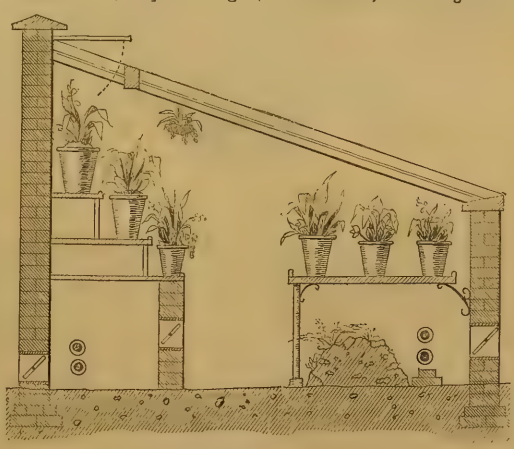
ODONTOGLOSSUM ROEZRI.

purpose for which spar or shells are used. Top ventilation should also be amply provided for by a longitudinal flap (as shown in the illustrations), which can easily be raised from the inside. The ventilators in the side walls may be closed by means of wooden slides outside. A house of this description of the simplest construction, heated efficiently (as shown) by a flow and return 4-in. pipe on each side, may be erected at very little cost. It can be constructed of any length; one from 60 ft. to 70 ft. would be large enough for a good-sized collection, and this length might very advantageously be divided in the middle, so that one compartment may be kept 8° or 10° warmer than the other.

Odontoglossum-house at Fernichurst.

Compost and Pottings.

Nearly all the Odontoglossums grow freely in a compost of fibrous peat, fresh living Sphagnum Moss, and a few thoroughly-dried horse-droppings, mixed well together, and a little coarse sandstone grit or river sand may be added, to keep the whole porous. The common white sand is far too fine for mixing with coarse Orchid composts, and it not unfrequently contains a large proportion of lime. Great care should be taken to have the pots, pans, and crocks, clean and dry before they are used. One of the greatest mistakes into which beginners in Orchid culture fall is using pots much too large for the plants. Overpotting Orchids of any kind is an error which cannot be too strictly guarded against, and in the case of Odontoglossums small pots are especially to be recommended; ample drainage is the next thing to be provided. Small sixty, forty-eight, and thirty-two sized pots are those generally used for Odontoglots, and these may be three parts filled with crocks, over which a layer of fresh Sphagnum Moss should be placed, to prevent the compost being washed down among the drainage in watering. Elevate the base of the pseudo-bulbs well above the rim of the pot, and surface the compost with a layer of fresh living Sphagnum Moss, among which the roots of all the species seem to delight in rambling, and it keeps the top of the compost fresh and in an equable state as to moisture, while at the same time its luxuriant growth is a safe token that the atmosphere is moist and genial to the plants. I have never seen Odontoglossums otherwise than healthy in houses where Moss and Liverwort will grow well.



Lean-to Odontoglossum-house.

The following list includes, as I have said, all the more beautiful and desirable species now in cultivation, although there are nearly as many more known to botanists. Seventy-nine species are described by Reichenbach in the sixth volume of "Walper's Annales," and beautiful coloured plates of the most handsome of these are given in Bateman's "Monograph" of the genus Odontoglossum, and in Warner's "Select Orchids."

The O. Phalænopsis or Miltonia-flowered Group.

O. Phalænopsis.—A very distinct and beautiful species. Its ovoid bulbs are two-leaved and of a very pale whitish-green colour; leaves slender, Grass-like, pale green or glaucous; scapes slender, one or three flowered, shorter than the leaves; sepals and petals oblong, about an inch long, pure white; lip very large and flat, fiddle-shaped—that is, contracted in the centre, white, with a lilac blotch, and a few purple spots. This species is rather delicate, and will be found to require a warmer temperature than most Odontoglots, except O. Krameri. The house in which it is grown should not be allowed to fall below 50° during the winter months. It requires an equal temperature, free from sudden changes, in order to grow it successfully. I have never seen it grow so freely as it does in the rich collection of O. O. Wrigley, Esq., of Bury, under the care of Mr. Thos. Hubberstey. Plants of it are there grown by the dozen, and one fine specimen of it has been exhibited both at Manchester and London exhibitions in splendid condition. Mr. Ward, of Leyton, is also very successful with this plant, and exhibits it annually in excellent condition, a mass of fresh Grassy leaves and white, lilac-blotched flowers. It is a native of Ocana, whence it was introduced about 1850, by M. Schlimm.

O. Roezli, inadvertently mis-spelt on our plate, is a very precious gain, its flowers being chaste in form and colouring, and it has the excellent habit of blooming twice or oftener in the same year; like O. Alexandræ, where a number of plants are grown, it is rare to find this species out of flower, and like O. vexillarium, it has the great charm of variety. The typical plant has flowers rather less than those represented in our figure, and the purple blotches at the base of the petals are not quite so dense. Our figure was taken from a remarkably fine variety, which bloomed in Messrs. Veitch's collection last year; and, more recently, Sir Trevor Lawrence has exhibited a plant of the same variety at South Kensington, under the name of O. Roezli atropurpureum, the purple markings of which were fully as dense as those of our plate. One of the most pleasing of all the varieties of this useful plant is O. Roezli album, which has pearly-white flowers, if we except a broad blotch of lemon-yellow on the disc of the lip. Although similar in habit to O. vexillarium, the leaves are narrower, and the plant appears to be of hardier constitution. It succeeds perfectly well treated like O. Phalænopsis, and is now grown in all good collections.

O. Warscewiczi. — This species has been long known to botanists, dried specimens having been sent to Europe by Joseph von Warscewicz, twenty or thirty years ago, from the Cordillera de Chirique. In general habit it very nearly approaches O. vexillarium in habit, and flowers very freely, but the flowers, although very pretty, are scarcely so handsome as those of O. Phalænopsis, which they equal in size. These flowers are of a creamy-white but sometimes suffused with pale rosy-lilac, and the lateral sepals are streaked in the centre with pale rose colour. I have seen the plant blooming freely in Mr. Day's collection at Tottenham, and consider it the least attractive of

all the species in this group, but, nevertheless, it well deserves a place in even a select collection, and as a species it is abundantly distinct, although apparently intermediate between O. Phalænopsis and O. vexillarium. A good coloured figure is given in the "Botanical Magazine," t. 6163.

O. vexillarium.—This plant has been known to botanists for some time, and Mr. Bowman, when travelling for the Royal Horticultural Society, found it on the western slopes of the Andes, in New Granada, and sent plants to Europe, which, however, failed to reach our shores alive. A year or two ago, however, Messrs. Veitch had the good fortune to receive a few living plants from an amateur collector, and larger importations have since been made by Mr. W. Bull, so that this, the most beautiful of all Odontoglossums, is now tolerably plentiful. The habit of this species and the next is peculiar, the glaucous leaves being closely imbricated around the flat, thin, pseudo-bulbs. Well-grown plants bloom most profusely; indeed, it is not uncommon for three or four spikes to make their appearance from the base of a good growth, each spike bearing from three to nine flowers. The finest specimens we have yet seen were exhibited by Mr. Richards, gardener to Baron Rothschild at Gunnersbury, one of which bore thirty-six large and richly-coloured flowers on four spikes, and the other and largest plant represented in our engraving bore forty-two paler, but none the less lovely, blooms. The individual flowers are 3 in. or 4 in. in diameter and of various shades of rose, the darkest varieties being nearly carmine, while others are nearly white. Like all the other species in this distinct group, O. vexillarium requires a warmer and more equable temperature than the generality of Odontoglossums, and succeeds best in a warm and humid atmosphere, where air is freely admitted through perforated zinc or tiffany, so as to prevent cold draughts. The plant should be well elevated above the rim of the pot or small shallow pan in which it is grown, and an abundant supply of tepid water is necessary, especially when the plants are in full growth or in flower.

Odontoglossum vexillarium.

The Alexandræ Group.

O. Alexandræ.—This is one of the most beautiful species in the genus, and deservedly popular with Orchid-growers. Its flowers vary from pure white to white suffused with rosy-lilac; they are heavily blotched on the lip and sepals with brown. A remarkably fine specimen of this species at Meadowbank bore, some time ago, 120 flowers, 56 of which were on one spike; and I saw many plants of this species growing in a brick pit at Meadowbank last summer, in very fine condition. This species should be grown by the dozen where there is convenience, as, where a good stock is kept, it may be had in bloom throughout the year with but little intermission. Its flowers last a long time in beauty. After potting, this and all other Odontoglots should be surfaced with a layer of fresh green Sphagnum, which conceals the compost, gives the pot-tops a clean and fresh appearance, and maintains an equable state of moisture at the root. Some of the best plants of this species I have ever seen were grown by Mr. Culley, gardener to Edward Salt, Esq., at Ferniehurst, near Leeds, who had a low span-roofed house almost filled with plants of this species in the most luxuriant health. Few Orchids produce flowers better adapted for cutting, as they remain fresh for at least ten days or a fortnight when placed in a vase of pure water. It is one of the best for exhibition purposes, and is generally met with at metropolitan shows in all good collections. It is known under the names of O. crispum, O. Blunti, and O. Weiri in some gardens. There are also several distinct varieties, one of the best being that known as O. Andersonianum, which has creamy-yellow flowers, more heavily spotted than in the type. Quite recently we have had importations of O. Alexandræ, with narrow, creamy-brown spotted petals, exactly intermediate between the typical O. Alexandræ and O. gloriosum, and it is singular to find that these intermediates form the transition stage between these distinct types, while we have a distinct line of demarcation between O. Alexandræ and its ally O. Pescatorei.

O. Pescatorei.—This lovely species, like its congener O. Alexandræ, blooms at different times during the season. I have recently seen it in great beauty in several places, and its pearly blossoms are doubly valuable during the winter months. There are several varieties of it, some nearly white, others spotted and blotched with dense purple, but all beautiful. I measured a flower of it in Lord Londesborough's fine collection at Surbiton, and found it to be fully 3 in. across. This is one of the finest varieties I have seen, its sepals and petals being very broad, and of good substance and colour. This plant roots vigorously in the compost above-named, and grows well in the cool house. It was introduced from New Granada about 1851, and is one of the finest species in this beautiful genus. It flowers from three to five weeks. It well deserves culture as an exhibition plant, owing to its purity of colouring, and when well grown it is far superior, that is, more effective, than O. Alexandræ, the flowers being of snow-like purity, on which the rich purple dots and blotches are seen to the best advantage. Mr. Ward, gardener to F. Wilkins, Esq., of Leyton, grows this plant very successfully, some of his plants bearing spikes a yard long, each having from forty to fifty flowers. Messrs. Veitch & Sons have some very large-flowered and distinctly marked varieties in their collection, some of which have rosy-lilac sepals and petals, and a pure white lip.

The nævium Group.

O. nævium.—A splendid species, native of the New Granadian Andes. Pseudo-bulbs rather flat, ovoid, wrinkled transversely when old; flowers from ten to sixteen on an arching spike, from 12 in. to 18 in. long; sepals and petals 1½ in. long, lanceolate, with wavy margins of a pure white colour, spotted and speckled with purplish-crimson. Flowers in May and June, lasting from four to six weeks. This is one of the finest of all the Odontoglots, and makes a fine exhibition plant when well grown.

O. nævium majus.—Another and a better form of this species, bearing larger flowers, which are produced in profusion on well-grown plants about April or May. A splendid specimen of it in the collection of F. B. Dodgeson, Esq., of Blackburn, has produced twenty-five flower-spikes, some of them bearing from fifteen to sixteen flowers. There was also a noble example of this plant in the select collection of John Russell, Esq., of Mayfield, near Falkirk, N.B. Both these plants flower very freely when in luxuriant health.

O. cirrhosum.—This is a recently introduced species, and decidedly the finest in this section of the genus, bearing ten to twenty large milk-white, purple-blotched flowers on tall arching spikes. Our illustrations (see next page) show the general contour of this species and a flower two-thirds the natural size. It has repeatedly been found on the western slope of the Granadian Andes, but the credit of first introducing living plants to our collections belongs to Mr. W. Bull, who received a consignment from the Bros. Klaboch, several of which bloomed in the spring of the present year. The individual flowers are about 3 in. in diameter by 4½ in. in length, something like a large edition of O. nævium majus, but with the addition of some rich brown streaks on the broad and serrated base of the lip. It was first exhibited in bloom by Mr. Spencer Brunton, of Beckenham, on April 5 of the present year, and unanimously received a first-class certificate, and it has also flowered with Sir Trevor Lawrence and Mr. Bull. It is one of the most chaste and beautiful of all the species, and well deserves careful culture.

O. blandum.—This plant is very similar in habit of growth to O. nævium, but the flowers are creamy-white in colour and the lip is broader, the markings being of a purplish-brown colour. It also differs in blooming during the summer and autumn months instead of in the spring. It does well under the same treatment, and deserves a place in all good collections.

O. crocidipterum.—A very pretty and free-flowering species from New Granada, somewhat resembling O. nævium or its congener O. gloriosum in habit and mode of flowering. Its pseudo-bulbs are compressed and conical, two-leaved; spikes from 12 in. to 18 in. long, bearing numerous pale yellow flowers spotted with brown; individual flowers 2 in. or 3 in. across. Its blossoms are delicately scented, like those of Orange blossoms. This plant is the link between O. nævium and O. gloriosum, and is one of the most profuse bloomers in the whole section to which it belongs.

O. gloriosum.—This is a strong-growing and very variable plant, something like O. Alexandræ in habit, and there is every reason to believe that these two species have become hybridised by insects in their native habitats, since O. Andersonianum, O. Chestertoni, and other forms referred in gardens to O. Alexandræ are exactly intermediate in habit as well as in the shape and colour of their flowers. This plant bears branching spikes of pale yellow-brown or purple-spotted flowers, very similar in structure and conformation to those of O. nævium, of which it has the narrow undulate petals and bilobed crest on the narrow lip. There are numerous varieties varying in the colour and size of the flowers and arrangement of the brown blotches and streaks.

Flower of O. cirrhosum (two-thirds natural size).

The O. luteo-purpureum Group.

O. triumphans.—This is a strong-growing plant, having large, glossy, two-leaved pseudo bulbs, something like those of O. Pescatorei, but larger, and often speckled with brown; flower-spikes three to seven-flowered; flowers 4 in. to 6 in. across; sepals and petals lanceolate, the margins of the petals sometimes slightly jagged, of a bright golden-yellow colour, spotted with cinnamon-brown; lip white with a lemon-yellow centre, the apex tipped with purple rose. This is rather rare, and will make a fine plant when well grown for the spring and early summer exhibitions. I have seen some fine varieties of this glorious species at Ferniehurst, and consider it one of the best of all the numerous yellow and brown-coloured species.

O. luteo-purpureum.—This is a very valuable species, of which O. Halli, O. hystrix, and O. radiatum are the most characteristic forms, these again becoming merged into the normal type through a long series of but slightly different intermediate sub-varieties. It is a question whether even the grand O. triumphans is not an extreme and superlatively beautiful form of this errant species; pseudo-bulbs conical, slightly compressed, two-leaved; leaves ob-lanceolate, often of a bronzy colour; flower-spikes from 1 ft. to 3 ft. long, sometimes branched; individual flowers from 2 in. to 4 in. across; sepals and petals lanceolate, acuminate, golden-yellow, heavily blotched with brown; lip white, spotted with brown, having its margin serrate, and a radiate golden crest.

O. luteo-purpureum Halli.—One of the finest forms, having flowers from 3 in. to 4 in. across; sepals and petals crimson-brown, tipped and margined with bright golden yellow; lip an inch broad, serrate, white, spotted with crimson; crest radiate, golden; column white, streaked with brown; the sepals and petals are green behind, streaked with brown. A splendid specimen of this variety bore four flower-spikes in the collection of E. Salt, Esq. One of the spikes was from 3 ft. to 4 ft. long, branched, and bore thirty flowers; it makes a fine plant for exhibition.

O. Coradinei.—Professor Reichenbach thinks this may possibly be a natural hybrid between O. triumphans—which it much resembles—and one of the forms of which O. odoratum is considered the type. Sepals and petals from 2 in. to 3 in. across, of a pale yellow colour, with two or three chestnut brown blotches; lip creamy-white, with a large irregular blotch on its disc, and a few smaller spots near its base; the crest of the lip is different from that of O. triumphans, and the habit and growth of this plant is more slender. It appears to be a splendid thing, bearing two or three flowers on a spike, but doubtless this number will soon be increased as the plant gets distributed.

O. cristatum.—This is not so showy as some species; but it is, nevertheless, highly interesting, and well worth cultivating. Its flower-spikes are slender, often branched; and the flowers yellowish, heavily blotched with purplish-brown; the crest of the lip is white, and in some varieties a large proportion of the lip is also white. It flowers freely during the winter, and lasts a month or six weeks in perfection.

The O. cordatum Group.

O. cordatum.—A distinct species, found in Mexico and Guatemala, and introduced to this country about 1837. In bulbs and foliage it somewhat resembles O. maculatum, but is very distinct from that species. When well established it bears numerous erect spikes of flowers, the sepals and petals of which are about 1½ in. long, lanceolate, the apices being attenuate and often wavy. In colour they are very remarkable, being heavily blotched with a dark brown (in some varieties of peculiar richness) on a ground colour of pale greenish-yellow. The lip is heart-shaped, of a white colour, blotched, and often margined with brown, and furnished with a pubescent bilobed crest. It is a pretty and decidedly distinct species, well worth culture, as a contrast to the more brilliant-coloured kinds. In the "Botanical Magazine" this plant is confounded with O. maculatum, which bears larger and yellower flowers. It is a free-flowering kind, which gives but little trouble to the cultivator, its chief requirements being a cool and moist position, and plenty of water during the summer months. Good figures are given in Knowles & Wescott's "Floral Cabinet," t. 100; "Botanical Magazine," t. 4870; and "Pescatorea," t. 26.

Odontoglossum cirrhosum.

O. maculatum.—A free-blooming plant, very similar to the last in general habit, having bright green yellow-nerved leaves. As in O. cordatum, the flower-spikes are simple and many-flowered, the sepals and petals being yellow barred and spotted with brown, as is also the larger heart-shaped lip. It differs from O. cordatum in the petals being broader than the sepals, the racemes being drooping not rigidly erect. The lower bracts are half as long, and the upper quite as long as the ovary, and the double-toothed appendage, which stands at the very base of the lip in O. cordatum, is here wanting. A good figure will be found in "Pescatorea," t. 28.

O. madrense.—This is one of the most distinctly beautiful of all Odontoglots, and has recently been introduced in a living state by Messrs. Veitch, and it was exhibited a year ago by Mr. Wrigley, of Bury, and the Rev. J. B. Norman, of Edgware, under the name of O. maxillare. The pseudo-bulbs are sub-cylindrical, terminated by bright green leaves, and the flowers, which are borne on compressed scapes, are similar in shape to those of O. maculatum, but stouter in

substance, and of a pure white colour blotched with dark chocolate-purple, while the bilobed crest is suffused with lemon-yellow. The flowers last from six weeks to two months in beauty, and are most deliciously fragrant, like essence of Almonds. With the exception of those belonging to the Miltonia-flowered group, this plant is one of the most distinct and handsome of all Odontoglots, and only its present scarcity prevents its becoming a general favourite. Dr. Hooker, in figuring this plant for the "Botanical Magazine," t. 6144, mistook it for the O. maxillare of Lindley, a very different plant, having the membranous flowers with centrifugal markings so characteristic of O. Cervantesi, from which it is known by the wingless column and much larger yellow crest. It is a native of Mexico, and grows well treated like its allies.

The O. citrosmum Group.

O. citrosmum.—A plant of peculiar habit, well known in gardens under this name, having been introduced from Guatemala in 1840; pseudo-bulbs large and shining, two-leaved. Flower-spikes pendulous, bearing from fifteen to thirty large fragrant blossoms. It flowers in May and June, and lasts a month in perfection. This species will be found to grow best in the warm end of the house, among the Cattleyas and Miltonias.

O. citrosmum roseum.—A noble form of the above, having large, rosy-tinted sepals and petals, and a rosy-purple lip. A plant of O. citrosmum roseum in the collection of Dr. Ainsworth, of Higher Broughton, near Manchester, has borne fifty-two flowers on a single-branched spike. Mr. W. Mitchell grows this plant remarkably well, and when in good health few plants are more beautiful or distinct. It is the O. pendulum of Lindley, a name derived from the graceful way in which the spikes droop from the base of the bulbs.

O. Krameri.—A very pretty little species from Costa Rica, related to O. pendulum. Its pseudo-bulbs are flat, one-leaved flower-spikes from two to three flowered; flowers rather smaller than those of O. citrosmum (pendulum), and more delicately tinted; sepals and petals oblong, white, suffused with flesh-colour; lip reniform, of a soft flesh-colour, having a yellow crest, below which occurs two undulating transverse brown lines; the lip is also dotted with purple. Grows well in peat and Sphagnum in the warm end of the house. In a small pot and suspended near the light in a warm Cattleya house, this plant thrives well, and often produces two or three spikes from the base of the last made growth, and few species have more delicately beautiful flowers. It is by no means a showy plant, but one likely to please amateurs.

The O. Rossi Group.

O. Rossi.—A beautiful species, of dwarf habit; pseudo-bulbs angular, rather larger than those of O. Cervantesi, which it resembles in habit; scapes from one to three-flowered; flowers from 1 in. to 2 in. across; sepals lanceolate, about 1 in. long, white, barred with brown transversely; petals sub-hastate, much broader than the sepals, pure white, with a few spots at their bases only; lip oblong or cordate, pure white, with a lemon-yellow bilobed crest; column white; a delicate, free-flowering plant, blooming during the winter, and lasting from three to four weeks. It is a native of Mexico.

O. Rossi superbum.—This select variety is a better form, having larger flowers than the typical species. Its flowers are from 2 in. to 3 in. across, barred with crimson, very distinct and effective.

O. Rossi Warnerianum.—This is another fine form, having pseudo-bulbs 2 in. high; flowers from three to five, on a scape longer than the leaves, 2 in. to 3 in. across, with broad segments; sepals and petals pure white, barred and blotched with purple at the base; lip cordate, crenate, white, with a golden crest.

The two last-named varieties bear very large and handsome flowers quite out of proportion to the pigmy habit of the plants, and these last fully a month in flower.

O. Cervantesi.—A very pretty dwarf species, introduced from Western Mexico in 1845, and often known in gardens as O. membranaceum. It has small, angular, one-leaved, pseudo-bulbs, and produces a flower-spike from 4 in. to 6 in. long, bearing four or five delicate membranaceous flowers, more or less of a soft, rosy colour. The bases of the floral segments are marked with transverse bars of brown or brownish-crimson; the lip is white. It is a pretty little species, well worth growing, and lasts from three to four weeks in flower. There is a very large and handsome variety of this plant grown in gardens under the name of O. membranaceum roseum, the flowers being from 2 in. to 3 in. in diameter, and borne five or six together at the apex of a 6-in. to 8-in. high scape. Grown in small pots, these form attractive decorative plants, but if over-potted or massed together, in order to make "specimen" plants, they almost invariably fail. They may be grown on flat blocks, but require a plentiful supply of moisture.

O. Ehrenbergi.—Reichenbach describes this as one of the prettiest of all the white-lipped species in this group, and remarks that in habit it is hardly distinguishable from O. Rossi, but it seems to be of dwarfer habit, and bears smaller, narrower-petalled flowers, while the crest of the lip is entire, not bilobed, and white instead of yellow. It is a free-blooming species, and well deserves a place in all collections, its flowers being produced in autumn and winter, and lasting a month or more in beauty.

The O. nebulosum Group.

O. nebulosum.—This is a large-flowered species, that succeeds perfectly under the coolest of indoor treatment. In its native habitat it is found at from 8000 ft. to 10,000 ft. elevation. Pseudo-bulbs roundish, two-leaved; spikes stout, from five to seven flowered; flowers from 2 in. to 4 in. across; sepals and petals from 1½ in. to 2 in. long, 1 in. to 1¼ in. broad, oblong, slightly incurved, white, more or less spotted with brown; lip cordate, with a lemon-yellow bilobed crest, and a few brown spots. When well grown it is a very ornamental plant, and there are several varieties which vary in the size and number of the brown blotches. The most distinct of these is O. nebulosum candidum, a white form often met with in good collections, although it is not so highly valued as the spotted type.

The O. Uro-Skinneri Group.

O. Uro-Skinneri.—This has large, speckled, pseudo-bulbs and broad foliage, and is altogether distinct from most of the other species, both in habit and flower. Like most other Orchids it varies considerably in the size and colour of its flowers, some varieties being very richly tinted. The sepals and petals are yellowish-green, more or less heavily blotched with purple-brown. The lip is broadish, cordate, of a white colour mottled with rose. This species grows well in the coolest house, but requires an abundant supply of moisture nearly all the year. It bears from ten to twenty flowers on spikes from 2 ft. to 3 ft. long, when well established and in good health. Good varieties of this plant are very effective when well grown, and of all the other species that can least withstand the evil effects of a dry atmosphere; but placed in a cool, moist, and shady corner of the house, it grows very rapidly, forming enormous succulent bulbs and fresh, thick leaves, which are in due time succeeded by strong, arching flower-spikes. The best examples I have seen of this plant were grown by Mr. Culley in a moist house without any fire-heat in summer, and under precisely the same cultural conditions as Disa grandiflora, both being syringed in summer several times a day.

O. Bictonense.—This is another species from Guatemala, and one which bears numerous spikes during the winter and spring months. The spikes are from 18 in. to nearly 3 ft. high on good specimens, and bear fifteen to twenty flowers, which open in gradual succession. Some varieties produce branched spikes, while in other specimens the five or six simple spikes borne by each plant rush up straight and slender like culms of wheat, the white, lilac, or rosy flowers being borne in two distinct rows along the upper half. This species and the last form a group by themselves, almost as distinct in its way as that formed by O. grande and O. Insleayi, and both the species grow well under the same cool and moist conditions. The flowers measure about 1 in. across, and are of a yellow colour blotched with brown. The lip is often white, and sometimes of the deepest rose. It sports into several varieties, the best of which are very ornamental.

The O. coronarium Group.

O. coronarium.—This is one of the coolest species we have, coming from the Andes of Peru at an altitude of 8000 ft. Its large, wrinkled, flat bulbs are produced at intervals along a creeping rhizome, and bear a short, oblong leaf at the apex. Flower-spike erect, from 12 in. to 16 in. high, bearing about thirty or forty flowers; sepals and petals bright brown, margins yellow; lip of a bright golden colour. Lasts a long time in flower. This plant flowered in 1872 in Lord Londesborough's collection, under the care of Mr. Denning, for the first time, I believe, in this country, although it has long been introduced. The flower-spike was borne by the third bulb back, not from the last made growth. This plant bears very cool treatment, and is known in some nurseries and gardens as O. candelabrum, and also, more rarely, as O. brevifolium. Grows well in peat and Moss in a flat pan suspended near the light. Flowers from March to May.

The O. pulchellum Group.

O. pulchellum.—This pretty little white-flowered species from Mexico was introduced some time before 1841. There are several varieties of it, some bearing flower-spikes very little larger than those of the Lily of the Valley, while others bear flowers an inch in diameter. The sepals and petals are of a pure crystalline white; the lip is bent nearly at right angles, and has a crest shaped like a W, of a golden or lemon-yellow colour, spotted with crimson; the flowers are borne nine or ten together on erect spikes, among dark, Grass-like leaves; it is a profuse bloomer when thoroughly established, and its fragrant flowers form a very elegant addition to bonquets. It lasts a month or even six weeks in perfection. The smallest form is known in gardens under the name of O. Egertonianum, and of slender habit, bearing erect spikes of drooping Lily-of-the-Valley-like flowers. O. pulchellum grandiflorum is the best form and bears flowers over 1 in. in diameter, these being of snowy whiteness, with a soft lemon-yellow blotch on the disc. Well-grown plants are very useful, as they produce a plentiful supply of flowers for cutting during the winter and spring months.

The O. roseum Group.

O. roseum.—This is but little known at present, although one of the oldest and prettiest of the entire group. Messrs. Backhouse and Sons, of York, have been fortunate enough to introduce it within the last few years. Pseudo-bulbs ovoid, two-leaved; leaves ob-lanceolate, about a foot long; spike arched or drooping, from ten to twenty-flowered; flowers about an inch across, and of a uniform deep rosy-crimson colour, the apex of the colour only being white. When well grown this is one of the most elegant and effective of all the species, its slender spikes of bright rosy flowers drooping gracefully among the dark glossy leaves. In size of flower and general habit this plant comes near the O. pulchellum group, but in general appearance it might readily be mistaken for a Mesospinidium, the habit being identical, and the form and colour of the flowers very similar. It is a native of Peru, and should be in all collections.

The O. grande Group.

O. grande.—Though an old, this is a truly magnificent species, which blooms during the autumn and winter months. This, O. Insleayi, O. citrosmum, O. Krameri, and O. Phalænopsis, like a few degrees more heat than the generality of Odontoglots, and will be found to succeed better in a Cattleya house, or in an intermediate temperature, rather than in the cool house. O. Phalænopsis is especially sensitive to either extremes of temperature, or to stagnant moisture. Well-established plants of O. grande make fine subjects for exhibition, and produce very large flowers of golden yellow, heavily blotched and barred, which are in great profusion when the plant is well grown. Few other Odontoglossums are as effective as this, and it has the good quality of retaining its gorgeous beauty for a considerable period.

O. Schlieperianum is a distinct, summer-blooming variety of O. grande, bearing rather smaller and more pallid flowers, while in structure these are somewhat intermediate between O. grande and O. Insleayi. These three types form a very distinct section of the Odontoglossa, their habit of growth being nearly identical.

O. Insleayi.—This plant mainly differs from O. grande in having smaller flowers with a narrower and more intense golden lip, and it well deserves a place as a useful winter-blooming plant. When well grown it is a profuse bloomer, and the contrast between the apple-green-brown barred sepals and petals, and the vivid golden lip is most striking. It succeeds under the same treatment as O. grande. The best variety is O. Insleayi leopardinum, a brighter coloured form recently introduced in quantity by Messrs. Backhouse & Sons, of York, and which is by them very successfully cultivated in a sunny Mexican house, where a minimum of shading material is used, even during the hottest of summer weather. This variety is so superior in every way to the typical plant, that it should be grown in preference to it.

Orris Root (Iris florentina).—As may be seen even in the "Divina Commedia," cant. XVI., the ancient arms of Florence was a white Iris on a red shield, which were subsequently altered, the Red Iris or Lily (giaggiolo) now being on a white shield. This probably indicates an early cultivation of Orris-root near Florence. In the early ages, that of Illyria was held to be the best ("Pharmacographia," p. 599), and was still quoted in many of the German lists under notice. In that of Schweinfurt, in 1614, Radix Iridis Florentinæ, however, is the only one mentioned.—"Pharmaceutical Journal."

THE FRUIT GARDEN.

FRUIT TREES FOR GABLE-ENDS AND WASTE WALL SPACES.

WHEN we look around us and see the immense strides which the culture of fruit trees has taken, both in this country and on the Continent, during the last quarter of a century, we are apt to imagine that the art of growing fruit has not only arrived at its highest perfection, but that it has also reached its very fullest extension. If, however, we look a little more closely into the matter, we shall find reason for reconsidering this too favourable verdict. For many years past we have heard around us nothing but speculations as to where fruit trees should be grown next, such has been the spread of fruit cultivation both under glass and in the open air. Many, however, believe that large planters of fruit trees will, in time, have to transform their superabundant material into Pea sticks, props, and other supports; but these are false prophets who do not seem to realise the fact that the taste for growing fruit is becoming more and more popular every day, and that the system of high culture, although it does not limit the number of years of production, shortens the existence of the tree, and that the crowded plantations of oblique, vertical, crossed, and U-shaped cordons, so justly and generally adopted now-a-days, require a larger number of trees than the old system. But what the greater majority of that class fail to see is, that there are great numbers of wasted positions which could be easily utilised for fruit-growing. The Belgians have justly earned the reputation of not leaving a single corner of their country uncultivated; and one of their number, M. Burvenich, Professor of the State Horticultural School at Ghent, urges that the gable-walls of buildings of all kinds might be much more freely utilised than they are for growing fruit trees, and that, too, with a minimum of trouble and expense. M. Burvenich has already done good service to the cause of fruit culture by strongly advocating, both verbally and by means of his pen, the advisability of planting school playgrounds with fruit trees, and his efforts have met with successful responses in numerous cases. In a small pamphlet, published at Ghent, M. Burvenich gives a description of his system, of which the following is a translation:—But (asks our author, speaking of his own country) are there no other waste places where we can grow fruit trees? What numbers of school-yards are there not open to fruit-tree plantation now that the question, which has been examined both from the schoolmaster's and cultivator's point of view, has been solved by numberless favourable results. When there are no more orchards to plant, when all our school playgrounds are full of trees laden with fruit, under the welcome shade of whose foliage the school children disport themselves, when the country roads are bordered with fruit trees, as in France and Germany, when the meadows shall be intersected by rows of Pear trees, we shall still not have too many fruit trees, for the gable-walls of our houses, farm buildings, barns, stables, and coach-houses will still remain at our service.

In the case of farms, communities, villas, and cottages, even those inhabited by farm labourers or workmen, there is generally at least one wall, if not more, which will serve for fruit growing. These wasted, or little used gable-walls are specially suited to fruit culture, and if used for growing properly selected kinds, will yield their proprietor a large profit. By training fruit trees against the gable-walls of houses, there is no need to fear the drippings from the roof, which so injuriously affect fruit trees trained against the side-walls of houses unprovided with gutters. It generally happens, too, that the soil being almost in a virgin condition, is naturally favourable to the growth of the trees. In such situations the soil is generally rich, and is (as a rule) made ground, having been well disturbed and turned over in digging the foundations of the building, besides being frequently mixed with lime-rubbish, one of the most favourable ingredients in a soil intended for the growth of fruit trees. The triangular form of the gables themselves also will naturally equalise the espaliers which are proposed to be trained against them; besides which, these gable-walls being pretty extensive would allow wide-spreading, tall-stemmed espaliers.

The utilisation of gable-walls offers another advantage which is particularly important, inasmuch as they are not only useful as a new source for producing fruit for the market or shop, but still more so for good stock fruit, of which there is generally a great scarcity amongst consumers, and which besides yields a large profit to the grower, being sold at so much per fruit and at a high price. It would be wasting time and the space at our command to discuss at any length the difficulty of growing stock fruit in the open orchard or field in which the trees are exposed to the inclemency of the weather on all sides. If the blossoms escape being destroyed or injured by the cold of late springs, and the fruit does not spot or crack in summer, we have still to dread the equinoctial gales of September, which bring to the ground even the most vigorously-grown fruit at a time when they require at least two months' additional ripening. The system we are advocating is not only meant to be adopted as a means of procuring a few early Pears or Apples, but to effect a much more solid improvement in fruit growing. It is intended, as may be easily perceived, to produce results very much greater than can be obtained in the orchard on the one hand, or in the fruit garden on the other. It is clear, however, that it is only those gable ends which are exposed to the proper aspect which will yield a superior result, those which are not so favourably situated as regards sunlight being reserved for early sorts of good quality.

Cultivation of the Pear on Gables.

Choice of Sorts.—Of all fruit trees the Pear tree is the best fitted for this form of culture. It is easily grown, always succeeds, allows itself to be trained into almost any form, and yields fruit which always commands a ready sale. It may be grown in almost any soil, and produces varieties which suit almost any aspect. Thus, for a gable-wall, with a southerly, south-easterly, or south-westerly aspect, a high-stemmed espalier of the Doyenné d'Hiver is most suitable, without, at the same time, excluding several others, the names of which will be given farther on. We propose this kind, however, for the object we have in view, because it is one of the very late Pears, besides being of excellent quality, and always commanding a ready sale in the market. It is well known that neither the Doyenné d'Hiver nor the Bergamotte de Pentecôte succeeds well when grafted on a Quince stock, and that in many soils the tree languishes, after having blossomed freely, promised greatly, and produced no fruit. To succeed well in the culture of this Pear, it must be grafted on a free stock, and be trained against a well-exposed wall, with plenty of elbow-room, that is to say, it must have plenty of space to develop laterally. Under these conditions it will grow luxuriantly, and will give abundance of fruit. As a rule, gable-walls of this aspect are completely wasted instead of being more or less covered with Calebasse d'Eté, Jargonelle, Gratioli, or Bon Chrétien d'Espagne Pears.

Gable-walls facing the west should be used for high-stemmed espaliers of the Poire de Tongres (Durondeau), one of those varieties which, although it grows well in an orchard, increases rapidly in size, depth of colouring, and quantity, when grown on a wall with a western aspect; it becomes, in fact, quite another fruit, both in appearance and flavour.

For gable-walls facing the east, the Beurré Diel succeeds best. It is another example of a Pear tree which only becomes really prolific when it has plenty of room to develop its branches, the fruit of which, if exposed to the free action of the air, the cold, and the rain, remains small, becomes covered with spots and cracks, the flesh at the same time losing its mellowness and becoming gritty. The Beurré Diel, when grafted on a tall, free stock, will easily cover the whole of a large gable-wall, and yield large, handsome, and well-flavoured fruit.

The north is the worst aspect of all. Good fruit, however, can be cultivated on a gable-wall facing that quarter, provided it be pretty open. The tree must be planted on a mound, and the soil must be made very porous by laying a foundation of rough stones and filling in with soil mixed with sifted lime rubbish and ashes. The best variety for cultivation in this position is the Beurré d'Amanlis, which will give good results in spite of the unfavourableness of the situation. The Beurré d'Amanlis is the very type of vigorous and beautiful growth. Its long and thick branches grow with perfect freedom, and will spread over a large surface if properly trained and tied or nailed, making a large quantity of wood every year. It is no rare occurrence to be able easily to form as many as three sets of branches in one year, always provided that the stem is sufficiently solid. The Beurré d'Amanlis has this in common with most pendulous varieties, that when the shoots are trained to grow horizontally, or even upright, they fruit much earlier. The Marie Louise, the Nouvelle Fulvie, the Poire de Curé, the Triomphe de Jodoigne, and several others, resemble the Beurré d'Amanlis in this respect. As may be seen, if the Beurré d'Amanlis fruit but slowly when grown in an orchard, no fault can be found with it in this respect when grown against a gable-wall. We give these four varieties as suitable for gable-walls facing the four different quarters with the certainty that they cannot fail to yield the maximum of profit. We cordially admit, however, that there are many other sorts of Pears which will give excellent results when planted against gable-walls, but their selection depends entirely on the tastes and wants of the growers.

The following arrangement will be found excellent:—For a north aspect, Williams' Bon Chrétien, a Pear which is most popular amongst those fruiterers who know it; it will always sell well, and profitably. This Pear is sometimes objectionable from giving off too strong an odour of Musk, and that in proportion as it is more or less directly exposed to the sun, or the length of time it remains on the tree before arriving at maturity. Planted in a northern aspect there is no need to fear this defect, and the fruit will always be of good quality.

For a western gable-wall the Louise Bonne d'Avranches may be chosen. This Pear, which grows easily everywhere, even facing the north, always gives a good supply of fruit when planted as an espalier with a western aspect, and displays all its best qualities, yielding large, highly-coloured fruit, with a surface as smooth as if they had been polished with oil; the flavour is sweet, combined with a certain amount of sharpness, strongly impregnated with the flavour of the Bergamotte. It fruits abundantly and long, and is a healthy, vigorous tree. There is but little to choose between the Marie Louise and the Poire de Tongres.

For an eastern gable-wall the Duchesse d'Angouléme is an excellent variety. This is one of the first Pears that people learn to cultivate, notwithstanding which it is not exactly faultless. In an open orchard, exposed to high winds, this Pear never attains its normal size, a characteristic which always gives it an increased value in the market. As a pyramidal or double espalier the blossom is liable to be injured by bad weather, so that this kind often fails to redeem its early promises, the smallest amount of wind causing the fruit to drop off before reaching maturity. The beautiful specimens of the Duchesse d'Angoulême Pear which every one admires so much at our fruit shows are all grown on espaliers. It is, in fact, only on walls exposed to the proper aspect that a large quantity of such fruit of first-rate quality can be regularly grown. It often happens that many of these Pears, when growing in favourable positions, are obliged to be held up by a cord or supported on a bracket to prevent them from falling off the tree by their own weight.

For gable-walls with a southern aspect the Passe Colmar is admirably adapted, especially when grown as a wide-branching espalier on a free stock. This variety, when grown as small trees, requiring to be grafted on the Quince stock, and to be frequently pruned, is sterile, or at any rate the yield is intermittent and irregular. We know of a specimen of the Passe Colmar, which covers an ordinary-sized gable-wall, and yields annually on an average 400 fine Pears. Estimating these as each worth one penny in the market, we have 33s. 6d. for the yield of one moderately-sized gable-wall. If a Vine had been planted in the place of the Pear tree it would possibly have produced a small crop of half-ripe Grapes, or, as more frequently occurs, it might have been altogether barren of fruit.

To sum up, if we grow Williams' Bon Chrétien on the north, Louise Bonne d'Avranches on the west, Duchesse d'Angoulême on the east, and Passe Colmar on the south, we have a choice of four excellent second-class Pears, which are so good that it may well be asked why they are not placed in

the first rank, a state of things which can be only accounted for by the fashion of the day and love of novelty. We may choose other varieties, and allow ourselves a certain amount of latitude to suit local tastes and requirements of the market or the consumer; for instance, a tall-stemmed Beurré d'Hardenpont, grown in a good situation, is not to be despised, and Beurré Sterckmans may be substituted for Beurré Diel. In the same way a Beurré Dumont may very well replace the Poire de Tongres, and the Beurré Hardy, a tree of vigorous habit, and fully deserving its name, may be counted on to yield good fruit, ripening in September when placed against a north wall. The Beurré Hardy closely resembles our old Beurré Gris, one of the varieties which are rapidly passing away. If the grower possess several buildings he may thus cultivate several kinds, but we have thought it necessary to point out to our readers the best sorts for the purpose. In addition to this we shall give a list of all the Pears which can be cultivated with profit against gable-walls of different aspects, in the order of their merit, so that the grower need not fear to be led into the error of cultivating common or mediocre kinds.

Forms of Training.

It will not be necessary to enter into any very detailed description of the best forms of espalier for gable-walls. The most useful form, except in the case of perfectly blank walls, is the tall-stemmed espalier. This will be found to be especially useful in the case of farms and school playgrounds, where low espaliers would only throw unnecessary temptation in the way. If, however, it be found advisable to grow low espaliers, it will be necessary to surround them with a lattice-fence. The extra expense involved in this protection is made up for by the increased yield of fruit, besides which the enclosure may be used for growing early Chervil, Radishes, small salads, or any plant that will not interfere with the growth of the trees. Another arrangement may be made, in which the lower part of the gable-wall is occupied by two dwarf espaliers, which may differ in kind from each other and from the large espalier, thus obtaining three varieties of fruit from the same gable-wall. It will thus be seen that it is not very difficult to cover our waste gable-walls with fruit trees, which would not only cover our tables or help to fill our pockets, but which would form admirable ornamental substitutes for ugly, weather-stained, unprofitable, blank walls.

By planting two trees, one on each side of the door, it is easy to cover the gable-wall in a way that is at once advantageous and extremely elegant. The tree planted to the right of the door covers the left side of the gable-wall, the tree on the left being trained over the right side of the wall. If there be a garret window in the gable the two main stems can be trained around it. Low gable-walls, which give but a small amount of angular surface, may be covered by dwarf Palmette Verriers. Buildings with Dutch roofs, or with square walls which are not gabled, and square spaces unpierced with windows or doors, may be filled with Palmette Verriers. We should advise those who commence this system of fruit culture merely as amateurs to cover the upper part of their gable-walls with tall-stemmed espaliers, and to fill up the space below the lower branches with single or double U-shaped vertical cordons. Cordons trained in this way will yield fruit much earlier, besides the great facility afforded to grow several varieties. The gable-walls of the smallest buildings may be covered by single or double cordons, or else by both kinds grown side by side, the odd numbers being single and the even numbers double, taking care to regraft all their extremities. For very small gable-walls the preference should be given to a half-high-stemmed Pear tree grafted level with the ground on a Quince stock. It is well known that Beurré Sterckmans, Espéren, Bergamotte, Beurré Diel, Poire de Tongres, Beurré d'Amanlis, and Louise Bonne d'Avranches, when grafted on a Quince stock, are sufficiently strong to form high and half-high stems, and throw out a satisfactory number of prolific fruit-bearing branches. If it be desirable to cultivate kinds which show more or less antipathy to the Quince stock, a good wood-forming variety should be grown half-high, which should again be regrafted with the kind you wish to grow. In case it is necessary to grow two trees against a gable-wall, and it is feared that the trees will be too luxuriant for the smal amount of surface to be covered by each tree, varieties on Quince stocks may be introduced with great advantage.

As will be seen from the foregoing remarks, it is always possible to utilise gable-walls for fruit-growing, no matter what may be their aspect, form, or arrangement as to doors and windows. The examples and plans that have been given will enable both amateurs and professionals, with a small amount of ingenuity, to invent combinations that will suit gable-walls of all shapes, whether pierced with one or many windows or doors. A plan to scale of the gable-wall should first of all be drawn on paper, and experiments made until the best method of filling up the vacant spaces is arrived at. When the openings merely serve to light or ventilate a coach-house or some uninhabited room, they should be ignored in the general plan, the trees being trained over them. In planning new buildings it is as well to bear in mind that the gable-walls ought to be covered with fruit trees, so that the openings may be arranged in the most suitable manner for the trees to have plenty of room to grow without being forced into unnatural shapes. In urging on the grower the importance of giving his trees a pleasing form, we do not mean to say that they must necessarily be rigidly symmetrical. It should not be forgotten, however, that, in order to fill up every vacant space, the branches should be at least 10 in. or 12 in. from one another.

There is another method of covering a gable-wall which is diametrically opposed to those forms already recommended, viz., a double espalier with reversed branches. This system has been adopted by M. Dolivot, a French fruit grower, who thus describes a gable-wall covered with a couple of trees grown by his method:—"The gable-wall of a small building serving as a bakehouse, and in the middle of which is situated the entrance-door, may be covered by means of a double espalier. Two high-stemmed trees are planted, one on the right, the other on the left of the door. As far as the top of the door the branches are so arranged as to form a sort of curtain, composed of three vertical cordons grafted on to a horizontal cordon at the base. The double rectangular curtain having been formed, the space above the door and reaching up into the gable is formed as follows:—Level with the top of the door a long branch is trained in a horizontal direction about 12 in. above the top of the door, crossing the corresponding branch belonging to the other side in the middle, and reaching nearly to the angle of the gable. These two branches are then laid upwards at a distance of about 12 in. apart until they reach within 2 ft. of the angle of the roof. Starting from this point, the formation of the curtain which is to fill up the two vacant halves of the space on each side is commenced, the vertical cordons being grafted on to the horizontal cordons, which lie level with the top of the door when fully grown. Finally, the two parent branches are grafted together by uniting the top of each shoot. This completes the whole of the work, and the gable-wall will be now completely covered with a gracefully trained espalier, fully repaying the pains and labour bestowed upon it."

M. Dolivot's mode of covering a gable-wall may not be so suitable as several of those which we have already described, inasmuch as it involves more labour in grafting than most amateurs care for, or professionals can afford to give; but it matters little which method be adopted, there will always be a full yield of good and handsome fruit. In these remarks we have kept exclusively in view the utilisation of wasted gable-walls, but we may remind the reader that all vacant wall spaces, no matter where found, may be fully utilised. The smallest square spaces between windows may be devoted to small subjects, the larger spaces being filled in like manner. A square front with two windows can likewise be covered with a Pear tree grown according to M. Dolivot's plan of downward training and double grafting. This method of training and grafting fruit trees may seem difficult or even impossible to those who are unacquainted with M. Dolivot's system; we, therefore, recur once more to this horticulturist's own words:—"According to this system an espalier is planted between two windows in the middle of a pier 4 ft. 6 in. wide, and trained against the side wall of a small house about 20 ft. long. From the branch planted in the middle of the pier, at a height of 1 ft. from the ground, two horizontal cordons are led un der-

neath each window to the right and left, and are intended to serve as correlative cordons. About 3 ft. higher up two lateral shoots are trained horizontally, so as to form on each side of the stem the starting point of a square curtain, composed of seven perpendicular cordons, the lower extremities of which are grafted into the correlative cordon underneath the windows. The central stem rises 1 ft. above the level of the top of the windows, and from this point start three cordons, which descend perpendicularly (one along the central stem itself, and the others, one on each side, 1 ft. from the central stem), and are grafted on to the first horizontal cordon when they are long enough. At the point where these two last-mentioned cordons leave the horizontal direction for the perpendicular, two shoots should be allowed to grow which should be trained horizontally over the windows, and, when long enough, allowed to descend perpendicularly, so as to enclose the windows in a kind of frame. When fully grown, they are grafted into the branch which lies immediately under the windows. About 1 ft. above this last cordon, another and a parallel cordon surrounds it horizontally at first, and then perpendicularly, and when long enough is grafted into both the lower horizontal cordons."

This is not the proper place to discuss the merits of M. Dolivot's system. Whether his will or will not play an important part in the future history of fruit cultivation, can have but little influence on the system of turning unused gable-walls to profit, by whatever method of training the fruit grower may find it advisable to adopt. We again repeat that the object of this system is to cover the vacant space as completely as possible, at the same time taking care to preserve the proper distance between each cordon. Train the cordons as far as they will go, and cut them as little as possible, and you will soon cover your barren walls with masses of rich fruit.

There is another method of covering small and moderate-sized gable-walls by means of superposed espaliers. The expression, is, perhaps, hardly a correct one, but it must be used, for no other so fully explains the idea and the object to be gained. It may happen that the gable-wall is so high that it cannot be completely and rapidly covered by one espalier only. In this and similar cases, the tree being trained in the Palmette Verrier form, the head is grafted, and the branches of the graft are trained horizontally, or nearly so. The graft should be of some variety that is somewhat wanting in vigour, but displaying great fruit-yielding qualities. The tree can be formed of two varieties, one growing over the other upon the same stock. The lower portion should be of a strong, robust description, such as Beurré Diel, Beurré Rance, Triomphe de Jodoigne, Beurré Sterckmans, Conseiller de la Cour; the upper should consist of a prolific kind, showing but an ordinary amount of vigour, such as Beurré Clairgeau, Louise Bonne d'Avranches, and Williams' Bon Chrétien. The form of the upper espalier should, of course, be suitable for the method of training. A wall of this description should be completely covered with a single tree formed of the two varieties, one of which is of vigorous habit, spreading over the square portion of the gable-wall; the other, of weaker habit, with horizontally trained branches filling up the angle of the gable.

We do not wish to stray from our subject, which we have already treated at some length, but we think that a new system of fruit culture, which will be to some extent a corollary to the plan of utilising waste gable-walls, may find its proper place in this treatise; we allude to the tall-stemmed double espalier. In the country it is frequently customary to place near the dwelling-house, especially where the front is exposed to the full rays of the sun during the greater part of the day, a screen of high-stemmed trees to keep the sunlight from playing too strongly on the house-front. Various trees are used for this purpose, such as the Lime, the Elm, the Robinia, and many others, and nurserymen grow large quantities of these trees with tall stems for the especial purpose; but the same object may be attained by growing fruit trees on the same plan, that is to say, with tall stems, and training them in the shape of a fan. The branches should be slightly oblique and trained against a number of galvanised iron wires stretched between posts, which will sustain the young trees during the first few years of their growth. We have seen the idea fully carried out in practice, and we have no hesitation in declaring that this mode of cultivation is most successful. The fruit trees which are best suited for this method of culture are strong Pear trees, Apple trees, and Bigarreau Cherry trees grafted on stout stocks. It would, indeed, be a pleasant sight to see our villas and cottages shaded with prolific fruit trees instead of Limes, Elms, or Robinias generally clipped into hideous forms. But the cultivation of fruit trees on the double espalier system should not end here. It may be applied in the case of low walls, over which indiscreet neighbours are in the habit of peering. The space above the wall costs nothing, the only expense being that of the posts and wires." The author may have apparently given too much attention to the Pear tree, inasmuch as there are many other fruit trees which are as easily and profitably grown against waste gable-walls. In most cases, however, the preference must be given to the Pear, for not only is its cultivation extremely easy, but its fruit always commands a ready sale everywhere. It is, besides, one of the hardiest of our fruit trees, and suffers less from bad weather than any other. Let us, however, examine the best means of cultivating other fruit trees against our waste gable ends.

The Peach, Apricot, and Cherry.

A strong Peach seedling, or Peach grafted on a tall-stemmed Plum stock, may be grown against the south gable-wall, and will yield a good supply of fruit, always provided that the late frosts have not made havoc with the delicate young blossoms. The Pêche d'Oignies, on a free stock, is a favourite sort for this mode of culture, and we have seen a large gable-wall wholly covered with a Brugnon de Feligny Seedling, and producing large quantities of beautiful fruit. A tall-stemmed Espalier Apricot, when it is not grafted on a Myrobalan but on a strong Plum seedling, succeeds well when grown against a south-east or even an east gable-wall, provided it be trained in the shape of a fan. At the Pomological Congress, lately held at Ghent, M. Baltet specially called attention to this method of growing Apricots on tall stems. The Apricot has the advantage of preferring paved or macadamised yards to the open ground. Planted in such situations its existence becomes prolonged. M. Delaville, professor of arboriculture at Beauvais, Oise, has justly called the Apricot the "city fruit tree." Grown against a gable-wall, the lower branches must be allowed to grow vigorously, and it must be trained to a fan-shape, or somewhat in the form of a Peacock's tail, but always on a tall stock. The Griotte Cherry is never so prolific as when grown on a tall stock. It may be grown against shaded walls, and will still yield abundance of fruit. The same may be said of the Cerise de Charmeux and the Belle de Chatenay. It is very possible that seeing the luxuriant growth of espaliers when trained against gable-walls, we might be able to grow the finest varieties of the Bigarreau Cherry, especially those kinds which do not succeed when their growth is impeded.

The Apple.

We are so much accustomed to disdain the cultivation of the Apple anywhere but in an orchard, that (as yet there have been but few experiments made in this direction) it is impossible to assert positively whether we may or may not count on obtaining good results from long-stocked trees grown against a west or north wall. Varieties which do not thrive in an open orchard, such as the White Calville, the Reinette Blanche, the Reinette Grise, the Haute Bonté, and similar first-class kinds, ought to have every chance of succeeding when grown against gable-walls. M. Charles Baltet (the greatest authority, perhaps, on the subject) declares that this mode of cultivation ought to meet with every success if the variety be grown on the Paradise stock instead of on the free stock. In any case it is beyond all doubt that we shall have to keep down the American blight more than when other methods of cultivation are adopted. M. le Chevalier de Biseau D'Hautteville, the eminent pomologist, of Binche, whose authority is incontestable, communicates the following particulars on the subject, quoting from an article on "Waste Gable-walls," published in the "Bulletin d'Arboriculture," for 1876, p. 14:—"I agree with M. F. Burnevich in considering that the cultivation of the Apple outside the orchard is too much neglected, or, to

speak roundly, neglected altogether. As far as my experience goes in growing the above-mentioned varieties on walls, exposed to the west, I have great pleasure in informing you that I have met with the greatest success. At this moment I have a long terrace situated on the ancient fortifications of Binche, about 70 ft. above the ground, and facing the west, upon which is growing an espalier of the white Calville variety, the upper portion of which is trained along the top of the wall for a distance of 12 ft. or 15 ft. The tree is nearly forty years old, and is grafted on a free stock. It produces magnificent fruit of a pale yellow colour, nearly always tinged with carmine on the side next the sun. They have a delicious flavour, and keep well from July to September. On the same wall there is another variety growing called the Unique, but it receives only a couple of hours of sunshine. I also get excellent results from this young tree, which is grafted on a Paradise stock. At the foot of this terrace is the garden of two great fruit growers—MM. Eric and Emile Grégoire. In this garden is planted a Canada Reinette, twenty years old; it is on a tall stock, and is trained against a north-west wall, where it receives but little sun. The soil is damp and cold, but it bears an abundance of fruit of enormous size, and is so beautiful that passers-by stop to admire the hanging clusters. I would add that I have also the Grey Canada Reinette, Warner's King, the Queen Pippin, the large flat Reinette, both on half-tall and tall stocks, in situations where they do not receive an hour's sun during the whole day, besides which the wall is shaded by tall Cherry trees, and at about a couple of yards opposite to them there is a hedge of Raspberry canes. These drawbacks do not prevent our gathering an abundance of fine fruit. I hope shortly to be in a condition to state whether the White Calville will succeed under such unfavourable conditions, for I have already planted several trees against this same wall which are now two years old. I cannot conclude this without urging on my colleagues the advisability of increasing the cultivation of the Apple by making a fresh choice amongst the numerous and rich collections to be found in the nurseries of our principal horticulturists, for this tree is of easy culture, yields abundance of fruit, more varied in form, colour, and flavour even than the Pear, besides keeping longer and with less attention. I will not speak here of all the varieties which may be cultivated, and whose good qualities are known to all fruit growers. It is sufficient to mention the following:—Royal English Reinette, St. Sauveur Calville, Grand Alexandre, Parmentier Reinette. The following may be also mentioned as large-fruited late varieties:—Rosée du Matin, Wagener, St. Barbe, Tauben Apfel, Golden Noble, Reinette Diel, Belmont, White Calville, Unique, Lelieur, Meriam, Duchesse de Brabant, Pomme de Prince, Guelton, Lorenzo Rooth. The following are handsome small varieties:—Api rose, Api noir, Pigeon blanc de manger, Pigeon Lucas, Pigeon d'Oberdieck, Sops of Wine, Petite Emma, Pretiosa. We do not entirely recommend the cultivation of the Vine against gable-walls, except when the fan shape is abandoned in favour of single or compound vertical cordons, according to the Thomèry system. At the Château d'Oosterzeele, not far from Ghent, there are several large gable-walls facing the south and covered with black Mulberry trees, which produce abundance of fruit, although shaded by high copses which are close by. The cultivation of the Plum is not recommended for gable-walls.

Special Treatment of Fruit Trees on Gable-walls.

We have no need to enter into any explanations with regard to the pruning and other operations to be performed on trees grown on gable-walls, because they are the same as those practised on trees grown in other situations. Long-stemmed espaliers should have their stocks lime-whited every two years, and the first year they may be even covered up with straw. In situations where they are liable to be gnawed by cattle, the stems should be covered with a couple of boards nailed together in the form of a V, or by fixing two slips of wood covered with sharp nails on each side of the stock. Situations not overshadowed by neighbouring trees should, as much as possible, be chosen, but where shadow is unavoidable, those varieties must be chosen which do not require much sunshine. Under such circumstances a south gable-wall may be planted with trees which thrive well in a northern or western aspect. The best way of attaching the branches to the walls is by slips of cloth. The branches, too, should be kept from touching the wall by interposing pieces of cork or wood; this precaution is absolutely necessary in cases where the branches lie against a wall which is strongly heated by flues or fireplaces. As for pruning, it is the same as for other trees, but as the upper portions of the branches are often difficult to get at, it will be as well to make use of the *sécateur*. On account of the difficulties involved in the care of the Vine and Peach during the summer, and the great trouble in training, they are not to be recommended for cultivation against gable-walls. The special and constant pains which the Vine and Peach require, need not, however, preclude them entirely from this mode of cultivation by amateurs who have both time and patience at their disposal.

MR. DARWIN ON THE STRAWBERRY.

This fruit is remarkable on account of the number of species which have been cultivated, and from their rapid improvement within the last fifty or sixty years. Let any one compare the fruit of one of the largest varieties exhibited at our shows with that of the wild Wood Strawberry, or, what will be a fairer comparison, with the somewhat larger fruit of the wild American Virginian Strawberry, and he will see what prodigies horticulture has effected. The number of varieties has likewise increased in a surprisingly rapid manner. Only three kinds were known in France in 1746, where this fruit was early cultivated. In 1766 five species had been introduced, the same which are now cultivated, but only five varieties of Fragaria vesca, with some sub-varieties, had been produced. At the present day the varieties of the several species are almost innumerable. The species consist of, firstly, the Wood or Alpine cultivated Strawberries, descended from F. vesca, a native of Europe and of North America. There are eight wild European varieties, as ranked by Duchesne, of F. vesca, but several of these are considered species by some botanists. Secondly, the Green Strawberries, descended from the European F. collina, and little cultivated in England. Thirdly, the Hautbois, from the European F. elatior. Fourthly, the Scarlets, descended from F. virginiana, a native of the whole breadth of North America. Fifthly, the Chili, descended from F. chiloensis, an inhabitant of the west coast of the temperate parts both of North and South America. Lastly, the Pines or Carolinas (including the old Blacks), which have been ranked by most authors under the name of F. grandiflora as a distinct species, said to inhabit Surinam; but this is a manifest error. This form is considered by the highest authority, M. Gay, to be merely a strongly marked race of F. chiloensis. These five or six forms have been ranked by most botanists as specifically distinct; but this may be doubted, for Andrew Knight, who raised no less than 400 crossed Strawberries, asserts that the F. virginiana, chiloensis, and grandiflora "may be made to breed together indiscriminately," and he found, in accordance with the principle of analogous variation, "that similar varieties could be obtained from the seeds of any one of them." Since Knight's time there is abundant and additional evidence of the extent to which the American forms spontaneously cross. We owe, indeed, to such crosses most of our choicest existing varieties. Knight did not succeed in crossing the European Wood Strawberry with the American Scarlet, or with the Hautbois. Mr. Williams, of Pitmaston, however, succeeded; but the hybrid offspring from the Hautbois, though fruiting well, never produced seed, with the exception of a single one, which reproduced the parent hybrid form. Major R. Trevor Clarke informs me that he crossed two members of the Pine class (Myatt's B. Queen, and Keen's Seedling) with the Wood and Hautbois, and in each case he raised only a single seedling; one of these fruited, but was almost barren. Mr. W. Smith, of York, has raised similar hybrids with equally poor success. We thus see that the European and American species can with some difficulty be crossed, but it is improbable that hybrids sufficiently fertile to be worth cultivation will ever be thus produced. This fact is surprising, as these forms structurally are not widely distinct, and are sometimes connected in the districts where they grow wild, as I hear from Professor Asa Gray, by puzzling intermediate forms.

The energetic culture of the Strawberry is of recent date, and the cultivated varieties can in most cases be classed under some one of the above native stocks. As the American Strawberries cross so freely and spontaneously, we can hardly doubt that they will ultimately become inextricably confused. We find, indeed, that horticulturists

at present disagree under which class to rank some few of the varieties, and a writer in the "Bon Jardinier," of 1840, remarks that formerly it was possible to class all of them under some one species, but that now this is quite impossible with the American forms, the new English varieties having completely filled up the gaps between them. The blending together of two or more aboriginal forms, which there is every reason to believe has occurred with some of our anciently cultivated productions, we see now actually occurring with our Strawberries. The cultivated species offer some variations worth notice. The Black Prince, a seedling from Keen's Imperial (this latter being a seedling of a very white Strawberry, the white Carolina), is remarkable from its peculiar dark and polished surface, and from presenting an appearance entirely unlike that of any other kind. Although the fruit in the different varieties differs so greatly in form, size, colour, and quality, the so-called seed (which corresponds with the whole fruit in the Plum), with the exception of being more or less deeply embedded in the pulp, is, according to De Jonghe, absolutely the same in all, and this no doubt may be accounted for by the seed being of no value, and consequently not having been subjected to selection. The Strawberry is properly three-leaved, but in 1761 Duchesne raised a single-leaved variety of the European Wood Strawberry, which Linnæus doubtfully raised to the rank of a species. Seedlings of this variety, like those of most varieties not fixed by long-continued selection, often revert to the ordinary form, or present intermediate states. A variety raised by Mr. Myatt, apparently belonging to one of the American forms, presents a variation of an opposite nature, for it has five leaves; Godron and Lambertye also mention a five-leaved variety of F. collina. The Red Bush Alpine Strawberry (one of the F. vesca section) does not produce stolons or runners, and this remarkable deviation of structure is reproduced truly by seed. Another sub-variety, the White Bush Alpine, is similarly characterised, but when propagated by seed it often degenerates, and produces plants with runners. A Strawberry of the American Pine section is said to make but few runners. Much has been written on the sexes of Strawberries. The true Hautbois properly bears the male and female organs on separate plants, and was consequently named by Duchesne dioica, but it frequently produces hermaphrodites; and Lindley, by propagating such plants by runners, at the same time destroying the males, soon raised a self-prolific stock. The other species often showed a tendency towards an imperfect separation of the sexes, as I have noticed with plants forced in a hot-house. Several English varieties, which in this country are free from any such tendency, when cultivated in rich soils under the climate of North America, commonly produce plants with separate sexes. Thus a whole acre of Keen's Seedlings in the United States has been observed to be almost sterile from the absence of male flowers; but the more general rule is, that the male plants overrun the females. Some members of the Cincinnati Horticultural Society, especially appointed to investigate this subject, report that "few varieties have the flowers perfect in both sexual organs," &c. The most successful cultivators in Ohio plant for every seven rows of "pistillata," or female plants, one row of hermaphrodites, which afford pollen for both kinds; but the hermaphrodites, owing to their expenditure in the production of pollen, bear less fruit than the female plants. The varieties differ in constitution. Some of our best English kinds, such as Keen's Seedlings, are too tender for certain parts of North America where other English and many American varieties succeed perfectly. That splendid fruit, the British Queen, can be cultivated but in few places either in England or France, but this apparently depends more on the nature of the soil than on the climate. A famous gardener says that "no mortal could grow the British Queen at Shrubland Park, unless the whole nature of the soil was altered." La Constantine is one of the hardiest kinds, and can withstand Russian winters, but it is easily burnt by the sun, so that it will not succeed in certain soils either in England or the United States. The Filbert Pine Strawberry "requires more water than any other variety; and if the plants once suffer from drought, they will do little or no good afterwards." Cuthill's Black Prince Strawberry evinces a singular tendency to mildew; no less than six cases have been recorded of this variety suffering severely, whilst other varieties growing close by, and treated in exactly the same manner, were not at all infested by this fungus. The time of maturity differs much in the different varieties; some belonging to the Wood or Alpine section produce a succession of crops throughout the summer.—"Animals and Plants under Domestication."

Early and Forced Gooseberries.—A correspondent ("L. D.") would be obliged by information as to which is the earliest kind of Gooseberry, if any show a difference in this respect; he would also like to know if the Gooseberry may be forced with success in gentle heat; and, if so, in what manner best—in pots, or planted out.

TREES AND SHRUBS.

CHOICE CONIFERS IN PLANTATIONS.

So far as I am aware, says a writer in the "Field," the idea of planting the more ornamental Conifers in quantity as plantations has not yet been carried out in this country in a manner worth mentioning. Single specimens have been planted freely in pleasure grounds and, in many cases, in woods, but large masses of any of the choicer kinds are uncommon. Now, looking at what can be accomplished in a landscape-gardening point of view, by planting other species in this way, one is tempted to ask if it would not be worth while to employ some of the best-growing and most useful of ornamental Conifers for similar purposes. Take the common Deodar, for example. For ornamental habit it has few equals, whether grown singly or in groups. It thrives in almost any soil or situation, and is at home where neither the common Spruce nor the Larch would succeed. It thrives in deep and in shallow soils of very different character, in a dry climate or a wet one; and no Conifer with which I am acquainted stands exposure better or, perhaps, so well. Further, the wood is described as being strong, close-grained, durable, and in many respects excellent. Mixed conspicuously among other trees, or planted by itself on slopes, hillsides, ravines, or even on the plain, its appearance is strikingly effective. I have seen a bare glen transformed, as if by magic, into a scene of beauty by simply clothing it with Larch; but the Deodar is far superior to the Larch, and is green all the winter, except when draped with snow, and then it is a study for an artist. Single specimens are very well in their place; but they are paltry compared with a forest, or even a grove, of towering Pines. An avenue of Deodars planted at measured distances has a certain effect—a fine tree looks well anywhere—but it is distinctly artificial. An avenue of Araucarias is still worse, for they are about the most formal-habited trees in existence, and when planted in rows this feature becomes disagreeably prominent. A belt of common Spruce and Fir trees mixed, planted thickly alonside a drive, but not too near it, is difficult to beat as regards effect; and I submit that select Conifers should be planted in the same way when they are used for such purposes. There would always be a fringe down to the Grass at the margin of the wood, and there is nothing in the least objectionable in the appearance of a Wellingtonia, a Deodar, or an Austrian Pine, for instance, rearing their heads in the background amidst a wealth of foliage varying in colour and general appearance. The few examples of this style of planting which I have seen were of a kind to impress us very favourably. There is not the least objection to planting deciduous trees among Conifers under such circumstances, but they must be used judiciously, for, owing to their spreading habit, they are sure to take more than their share in the struggle for existence. In certain situations, however, as, for instance, when it is desired to give a sub-Alpine character to a scene, they are better left out altogether. Another species suitable for general planting is Abies Nordmanniana, which also thrives and grows fast under very different conditions as regards soil and climate, and its timber is said to be the best among Silver Firs. In some places the Pine has been planted pretty extensively, and has thriven well. Of the Wellingtonia it is hardly necessary to speak, but its rapid growth and fine appearance commend it as one of the best; planted as a forest tree it would probably grow faster than when planted singly. A noticeable fact connected with this tree is the disproportionate thickness of the trunk, which increases in girth at a quicker rate than that of other Conifers. Young trees of it, six or seven years old, have quite massive trunks for their age. I noticed a second-rate specimen of it the other day, about 12 ft. high, with a stem as thick, 1 ft. from the ground, as that of some Larches at thirty or forty years of age, and the tree had not been planted above eleven or twelve years from the nursery; but in good soil the tree increases considerably faster than this. The Douglas Fir is another tree that deserves notice on account of its valuable timber and ornamental appearance, but the list is too numerous to particularise here; suffice it to say that that their use has hardly as yet extended beyond the boundaries of our pleasure

grounds, and that we have amongst them timber-producing trees of the most valuable description, and materials for furnishing the landscape with which the landscape gardener in this country has still to make himself acquainted.

COTONEASTERS.

By G. GORDON, A.L.S.

COTONEASTERS are free-growing, ornamental shrubs or small trees, which will thrive in any common garden soil, and, on account of their producing an abundance of fruit, which in mild seasons remains on the plants the greater part of the winter, are well suited for planting in all ornamental shrubberies, while the dwarfer Evergreen kinds are admirably adapted for growing on rockwork. They are all perfectly hardy, except the Mexican Cotoneaster denticulata, which requires protection in winter, or should be planted against a south wall in the neighbourhood of London.

Section I.—Deciduous or Sub-deciduous Kinds.

1. The Common Cotoneaster (Cotoneaster vulgaris, *Lindley*).—The leaves are oval, rounded at the base, tomentose beneath, on short foot-stalks, deciduous, and 1½ in. in diameter; the flowers are on few forked peduncles, white, with a reddish tinge, and produced in April and May; the fruit is round, terminal, somewhat downy, and of a green colour when young, but either red or black, according to the variety, when ripe. It is a native of Europe and Siberia, and forms a spreading bush 4 ft. or 5 ft. high. There are two forms of this species: the erythrocarpa, or red-fruited, and the melanocarpa, or black-fruited, which is the Mespilus Cotoneaster of Pallas, and the Mespilus melanocarpa of Dr. Fischer and Loddiges' Botanical Cabinet.

[Synonym—Mespilus Cotoneaster, *L.*]

2. The Woolly Cotoneaster (Cotoneaster tomentosa, *Lindley*).—The leaves of this are elliptic, obtuse, or rounded at both ends, densely coated beneath with a white tomentum, deciduous, and 2 in. long, and 1 in. broad; the young shoots, calyxes, peduncles, and young fruits are also thickly furnished with a woolly covering; the flowers are white, sometimes tinted with red, in dense, many-flowered, forked, terminal clusters, thickly coated with tomentum, and produced in April and May; fruit rather large, woolly when young, and of a black colour when ripe. This kind forms a spreading shrub, 4 ft. or 5 ft. high, and is a native of the Swiss Alps in rocky places.

[Synonym—Mespilus eriocarpa, *De Candolle.*]

3. The Loose-flowered Cotoneaster (Cotoneaster laxiflora, *Lindley*).—The leaves are oblong, or roundish-oval, obtuse at both ends, woolly beneath, quite glabrous above, and frequently with a mucro at the point, 2 in. long, and 1¼ in. broad; the flowers are in large, many-flowered, cymose panicles, or loose-forked, peduncled racemes, longer than the leaves, white-tinted with deep pink, and are, as well as the calyxes, glabrous. They are produced in great abundance in April, May, and June. The fruit is oblong, smooth, and black, with a bluish tint when ripe in September. This kind forms a straggling, deciduous shrub, 3 ft. or 4 ft. high, and is a native of Siberia, in the Soongarian desert, among rocks.

[Synonyms—Cotoneaster multiflora, *Bunge;* Cotoneaster nigra, *Wahlenberg.*]

4. The One-flowered Cotoneaster (Cotoneaster uniflora, *Bunge*).—The leaves are oblong, tapering at both ends, glabrous above and pubescent beneath: flowers greenish-white, on very short foot-stalks, solitary, and are, as well as the calyxes, glabrous; they are produced in May and June. The fruit is globose, and red when ripe in the autumn. This kind forms a deciduous-spreading shrub, 2 ft. or 3 ft. high, and is a native of Siberia, in sub-Alpine places. It differs from C. laxiflora in having solitary flowers and red fruits.

[Synonyms—Mespilus Uva-ursi, *Pallas;* Cotoneaster laxiflora uniflora, *Fischer.*]

5. The Moneywort-leaved Cotoneaster (Cotoneaster Nummularia, *Lindley*).—The leaves are orbicular, 1½ in. in diameter, entire, flat, mucronate at the apex, more or less emarginate, tomentosely-hirsute in the young state, but glabrous on the upper side in the adult ones, and rather distantly placed; the bark on the shoots, the buds, petioles, and under surface of the leaves, and part of the upper surface and midrib, are more or less hairy when in the young state, but afterwards become quite smooth when fully matured and deciduous. The flowers are white, in few, close, axillary cymes; they are produced in April and May. The fruit is rather small, numerous, black, and is ripe in September. This kind forms an elegant, spreading, round-headed, small tree, 10 ft. or 15 ft. high, with numerous slender, twiggy branchlets, and is a native of the mountain regions of Nepaul.

6. Dr. Royle's Cotoneaster (Cotoneaster Roylei, *Gordon*).—The leaves are broadly obovate or somewhat obcordate, quite obtuse, and mucronate at the apex, from ½ in. to ¾ in. in diameter, tapering slightly to the base, flat, entire, rather distantly placed, deciduous, and clothed with a dense, white tomentum on the under side, but quite smooth and somewhat glossy on the upper one; the twiggy shoots are long, slender, little divided, and woolly when young, but afterwards become smooth; the flowers are small, in close axillary, few-flowered cymes, densely coated with a silky, white tomentum, and white; they are produced in April and May. The fruit is oblong, small, smooth, and of a black colour when ripe in September. This kind forms a neat, spreading bush, 4 ft. or 5 ft. high, with slender, undivided twigs, and is a native of the Himalaya Mountains and Western India.

[Synonym—Cotoneaster Royleana, *Makoy.*]

7. The Toothed-leaved Cotoneaster (Cotoneaster denticulata, *Bentham*).—The leaves are elliptic or obovate-elliptic, ¾ in. in diameter, rounded, denticulate on both sides, mucronate at the apex, flat, and leathery in texture, smooth above, tomentosely-pubescent, and hairy beneath; the flowers are white tinted with pink, and in terminal, simple corymbs, with dense, wooly calyxes; fruit downy, very large, and pale pink. This kind forms a large, twiggy, sub-evergreen shrub, found in abundance on the sandstone hills about Regla, in Mexico, at an elevation of 6000 ft. It is only half-hardy in the neighbourhood of London, and requires protection in winter or to be planted against a south wall.

[Synonym—Nägelia denticulata, *Lindley;* Mespilus denticulata, *Sprenzel.*]

8. The Acuminated-leaved Cotoneaster (Cotoneaster acuminata, *Lindley*).—The leaves are ovate, acutely-pointed, mucronate, sub-deciduous, rather distant on the young shoots, and from 1 in. to 2 in. long, and nearly ¾ in. broad; they are pubescent or pilose on both surfaces, but particularly so on the under surface and young twigs; the flowers are white, axillary, and are produced in April and May on three-flowered peduncles, which are rather reflexed; fruit rather large, oblong, bright red, very abundant, and ripe in September, but remaining on the plants all the winter. It is a vigorous-growing, stiff, fastigiate, sub-evergreen, bushy shrub, from 6 ft. to 8 ft. high. Found on the mountains of Nepaul.

[Synonym—Mespilus acuminata, *Loddiges.*]

9. Simon's Cotoneaster (Cotoneaster Simonsi, *Hort.*)—The leaves are ovate, acuminate, and mucronate, ¾ in. long, and nearly ½ in. broad, thickly hirsute on the under side and young shoots, slightly so on the upper surface, particularly on the adult leaves, ciliated on the margins, and sub-evergreen; flowers terminal on the short, lateral branchlets, mostly in threes and fours and somewhat reflexed, very hairy, white deeply tinted with pink when young and in the bud state, and produced abundantly in May and June; fruit rather large, oblong, orange-scarlet, plentiful, and ripe in September, but remaining on the plant all the winter. This kind forms a rigid, sub-evergreen, bushy shrub, 5 ft. or 6 ft. high, which resembles very much C. acuminata, but has much smaller leaves and a much dwarfer habit of growth. It is a native of Central Asia, and is frequently improperly named Simmondsi in the trade lists.

[Synonyms—Cotoneaster acutifolia, *Turcz;* Cotoneaster Hoskeri, *Hort.*]

10. The Alpine Cotoneaster (Cotoneaster frigida, *Wallich*).—The leaves are oval-lanceolate, tomentose beneath when young, glabrous above when fully matured, mucronate, coriaceous, slightly crenulated, and 4 in. or 5 in. long, and about 1½ in. broad. The branchlets are smooth when matured, but woolly when young, and a good portion of the leaves and fruit remain on all the winter, and make a fine appearance at that season. The flowers are in terminal, forked, paniculate corymbs, small, snow-white, quite woolly, and are produced in great abundance in April and May. The fruit is small, spherical, bright red, and is ripe in September and October, and in mild seasons and sheltered situations remain on all the winter. This kind forms a robust, free-growing, small sub-evergreen tree from 10 ft. to 15 ft. high, found on the higher mountains of the northern regions of Nepaul, and derives the specific name frigida on account of the coldness of the locality in which it is found. Nussia is its native name in Nepaul.

[Synonym—Pyrus Nussia, *Don.*]

11. The Small-fruited Cotoneaster (Cotoneaster affinis, *Lindley*).—The leaves are ovate or obovate, from 3½ in. to 4 in. long, and 1½ in. broad, attenuated at the base, mucronate at the point, woolly beneath, as well as the petioles and calyxes; peduncles lateral;

flowers corymbose, bifurcate, in many-flowered heads, white, and are produced in April and May; fruit small, numerous, spherical, and bright red when ripe in September, but remaining on the tree all the winter. They are very ornamental. This kind forms a small sub-evergreen tree from 10 ft. to 15 ft. high, and is a native of Kamaon and Chittong, a town of Lower Nepaul. It very much resembles C. frigida in habit and appearance, but has broader ovate leaves, and appears little more than a wild form of that species.

[Synonym—Mespilus integerrima, *Hamilton;* Mespilus affinis, *Don.*]

12. The blunt-leaved Cotoneaster (Cotoneaster obtusa, *Wallich*).—The leaves are broadly ovate or obovate, glabrous when fully matured, 2½ in. long, and 1½ in. broad, entire on the edges, obtuse, and mucronate at the point, tapering slightly to the base, deciduous, and when young, with the petioles pilose and the margins ciliated; branches smooth, and the young shoots downy; flowers lateral, crowded in many-flowered cymes, glabrous, white, are produced in April and May; fruit in lateral-stalked cymes, large, spherical, smooth, black, and ripe in September, but remaining on the tree nearly all the winter. This kind forms a free-growing, large, bushy shrub, from 8 ft. to 10 ft. high, with a spreading head, and is a native of Nepaul and Kamaon.

[Synonym—Cotoneaster lævis, *Loddiges.*]

13. The Rod or Twig-branched Cotoneaster (Cotoneaster bacillaris, *Wallich*).—The leaves are ovate or obovate, tapering to the base, mucronate, glabrous, 2½ in. long and 1¼ in. broad, on rather long, slender foot-stalks, distant, and sub-evergreen in mild seasons; branches glabrous; branchlets very slender and twig-like; the flowers are in many-flowered, divaricate cymes, pilose, white, and are produced in April and May. Fruit small, in axillary cymes, on long, slender peduncles, smooth, and black when ripe in the autumn. This kind forms a large, bushy shrub, 8 ft. or 10 ft. high, with a spreading head composed of slender, twig-like branchlets. It is a native of Nepaul and Kamaon.

Section II.—Evergreen kinds, with small leathery leaves.

14. The Small-leaved Cotoneaster (Cotoneaster microphylla, *Wallich*).—Leaves oblong-cuneated, obtuse, deep glossy green, and smooth on the upper surface, pubescent beneath, thickly set on the lateral branchlets, about ½ in. long, and nearly 2 lines broad, and strictly persistent; the flowers are solitary, on the ends of the short lateral branchlets, pure white, and are produced in May and June; fruit globular, rather large, bright scarlet, and ripe in August, but remaining on all the winter. This kind forms a spreading and somewhat trailing, dense bush, full of rigid leafy spray, and only a few feet high, but covering a large expanse of ground. It is a native of the northern parts of India in rocky situations. It is well suited for planting on rockwork or training against a naked wall.

[Synonym—Cratægus rupestris, *Griffith.*]

Cotoneaster microphylla thymifolia, *Hort.*—This differs from the ordinary form of the species in having the leaves not more than one quarter the size, and in its very much smaller and more compact habit of growth, for it seldom exceeds 1 ft. in height, and forms quite a miniature plant. It is well adapted for planting on rockwork, where space is an object. This is a variety of the preceding.

[Synonym—Cotoneaster microphylla minor, *Hort.*]

15. The Round-leaved Cotoneaster (Cotoneaster rotundifolia, *Wallich*).—Leaves roundish or broadly ovate, ½ in. long and 4 lines broad, somewhat obtuse or slightly pointed, leathery in texture, quite smooth, and deep glossy green above, pilose beneath, and not very thickly placed along the shoots. The flowers are solitary, on the ends of the short, lateral branchlets, white, with the backs of the petals often pinkish, and are produced in May. Fruit rather oblong, smooth, and bright scarlet when ripe in August, but remaining on all the winter. This kind forms a dense, bushy shrub, 3 ft. or 4 ft. high, with rigid, spreading shoots, and is a native of Northern India and Nepaul.

[Synonym—Cotoneaster Uva-ursi, *Lindley.*]

16. The Himalaya Cotoneaster (Cotoneaster marginata, *Lindley*).—Leaves ovate-oblong or obovate, tapering somewhat at the base, rounded and mucronate at the point, smooth, and glossy green above, densely pilose beneath and on the margins, 1 in. long and ½ in. broad, and not very thickly set on the shoots. Flowers mostly in fours, but sometimes in more or less numbers, in terminal, close clusters at the ends of the short, lateral branchlets; they are white, with the calyxes and peduncles thickly covered with pilose hairs, and are produced in abundance about the end of May. Fruit deep crimson, globular, and ripe in September, but remaining on all the winter. This kind forms a fine, dense, spreading bush, from 4 ft. to 6 ft. high, with numerous twiggy branchlets. Native of the Himalaya Mountains.

17. The Box-leaved Cotoneaster (Cotoneaster buxifolia, *Wallich*).—Leaves ovate, acuminate, with rather long footstalks and tapering to the base, 1½ in. long and ¾ in. broad, downy on the under side when young, but quite smooth when fully matured, except on the margins and petioles, which are more or less ciliated in the adult state; flowers small, white, and in compact, short, terminal clusters, at the ends of the short, lateral shoots, mostly in fives, and produced in May and June; fruit globular, smooth, mostly in fives, deep crimson, and ripe in September. This kind forms a strong-growing, twiggy, straggling, evergreen bush, from 4 ft. to 6 ft. high, and is a native of the Neilgherry Mountains in India.

What the Cotoneaster granatensis of Boissier is I am unable to say, but I strongly suspect it is nothing more than C. vulgaris or C. tomentosa.

Trees at the Centennial Exhibition.—This presents nearly a complete exhibit of the forest trees of the United States. There are about 400 species and varieties, each represented by sections of the trunk and corresponding botanical specimens of the foliage, flowers, and fruit. The sections are 2 ft. long, in two pieces, one showing the outer surface of bark and the other sawed longitudinally and dressed to show the character of the grain and wood. Above each section, inclosed in a frame, is the corresponding botanical specimen of foliage, flowers, and fruit. This collection was obtained through twelve collectors in different parts of the Union. The greatest care has been taken to have all the specimens authentic and true to name. It is a remarkable and striking display of forest-wealth. There are fifty species of semi-tropical trees of Southern Florida, including five new species. There are twenty-five species from Texas, and thirty species from Southern California and Arizona, including some of the rarest and most interesting trees of that country, particularly the tree Yuccas and a recently-found Palm. There are fifty species from the Pacific slope of California, and ten or twelve from Oregon, and thirty from the Sierra Nevada Mountains of California, including large sections of some of the noblest coniferous trees of the world, such as the Sugar Pine, the Douglas Spruce, the Silver Fir, and others. From the mountains of Utah and Colorado there are twenty-five to thirty species. From Illinois and the Western States, fifty; from Vermont, twenty; from Virginia, fifty; most of which were obtained from the old Mount Vernon estate of General Washington. The Southern States, exclusive of South Florida, contribute about ninety species. The Oak family is represented by thirty species, including the famous Live-Oak of the South, the various white and black Oaks, both of the eastern and western portions of the continent. The Pine family is also represented by thirty species, of which more than half are peculiar to the Rocky Mountains and western coast. Of Spruces there are sixteen species, and of other Conifers about twenty.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Arundinaria falcata Seeding.—I have grown this Bamboo for twenty-five years, and have specimens of it of various dimensions both here and elsewhere, some of large size, but none of them has bloomed or seeded until this year. Now, strange to say, at every joint throughout the canes are clusters of seed; every plant is perfectly leafless and appears dying, a sad contrast to their hitherto beautiful plumose character at this time of the year.—J. M., *Axminster.*

An American Nursery.—The nursery of Ellwanger & Barry, at Rochester, in the State of New York, is, according to the "Albany Country Gentleman," the largest establishment of the kind in America, occupying 650 acres, containing 16 plant houses which cover 3,000 square feet of ground, employing 250 men for the eight busy months, more in the packing season, besides a large number of travelling agents. It employs thirty horses.

Climbing Shrubs in Hokkaido Woods.—Among climbing shrubs I more particularly remarked the magnificent Schizophragma hydrangoides, which do not think has as yet been introduced into foreign gardens, but which I dare to point out as one of the future leading novelties for our parks. The general appearance of this creeper is striking, and with its white sterile flowers resembles much a white Clematis at a distance, although it is a true Hydrangea, the rich green tint of its foliage is one of its great attractions. Among other climbing plants, I found Euonymus radicans, a plant now well known, which covered the trunks of trees in the same manner as Ivy, and is evergreen like its rival.—L. Böhmer, in "Gardeners' Monthly."

Tulip Tree Wood.—Though this tree is classed as a light wood, it is much heavier than the Poplar, its grain is equally fine and more compact, and the wood is easily wrought and polishes well. It is found strong and stiff enough for uses that require great solidity. The heart, when separated from the sap and perfectly seasoned, long resists the influence of the air, and is said to be rarely attacked by worms. Its greatest defect, when employed in wide boards and exposed to the weather, is that it is liable to shrink and warp by the alternations of dryness and moisture, but this defect is in a great measure compensated for by its other properties.

THE HOUSEHOLD.

RECEIPTS.

Red Currants for Jam.—Pick carefully 7 lbs. of fine ripe Red Currants, add to them 6 lbs. of pounded loaf sugar, at first gently simmer, then boil them rather fast for ten minutes. This is an excellent receipt, and makes a jam far superior to that which is boiled for a longer time.

Red Currant Jelly.—Take 6 or 8 lbs. of fine Red Currants to 3 or 4 lbs. of White; draw the juice by placing the jar which contains them in a steamer or bain-marie, strain it off, and to every pint add 1 lb. of pounded loaf sugar. Boil this juice fast for twenty-five minutes, skimming it carefully, and put it into small shallow pots, which have been previously dipped into cold water. It is unnecessary to pick the Currants for jelly.

Currant and Gooseberry Compote.—Put a quart of Red Currant juice to 5 lbs. of loaf sugar; set on the fire, and when the sugar is dissolved, put in 8 lbs. of red, rough, ripe Gooseberries; let them boil half an hour, then put them into an earthen pan and allow them to stand for two days; then boil them again until they look clear, and let them stand a week to dry a little at the top; then cover them with brandy papers.

French Raspberry Tart.—Choose a pint of very fine ripe Raspberries, either red or white; stem them, and throw them into a boiling syrup made with a quarter of a pound of loaf sugar and a tablespoonful of water; withdraw them immediately from the fire, line a tart dish with a puff paste rolled as thinly as possible; lay in the fruit and syrup, observing to keep the Raspberries as whole as possible; put into a quick oven for twenty minutes; strew more sugar over it and glaze it, or, if to be served cold, pour some cream over it.

Strawberry Jam.—It is best to choose deep red Strawberries for this excellent preserve; the Elton Pine is most successful, other kinds taste, perhaps, equally good, but are less attractive in appearance. To every pound of fruit weigh three-quarters of a pound of pounded loaf sugar, boil the Strawberries with a pound of the sugar for ten minutes to draw the juice, then add the remainder of the sugar and boil the preserve twenty minutes longer, carefully stirring and skimming it all the time; cover the pots with brandy papers the next day and tie them down. It will be unnecessary to repeat the directions for stirring and skimming each time, because no careful cook will omit these; the slightest neglect in these respects is fatal. The pots used for preserves should be perfectly clean and dry, and when filled must be kept in a cool dry place; warmth causes preserves to ferment, while damp renders them mouldy. Raspberry jam may be made exactly like the preceding. White Raspberries make excellent jam; they are treated in the same manner.

Raspberry Vinegar.—Put a quart of Maille's French vinegar into a large basin, and throw in 3 or 4 lbs. of Raspberries white and red mixed, or only red (they can be put in all at once or as they ripen); stir them every day for a week, then drain the vinegar from them, passing it through muslin; boil it for five minutes with its weight of sugar, put it into clean dry bottles, cork these well, and keep them in a cool place.

Mixed Herbs.—Pound together in a Wedgewood mortar, dried Mint and Sage, half an ounce of each; Celery seed, one drachm; cayenne, a quarter of a drachm. Rub them through a fine sieve. This gives a savoury relish to Pea-soup and to water gruel. A drachm of allspice or black pepper may be pounded with the herbs instead of cayenne. Or dried Parsley, Sweet Marjoram, Winter Savory, Lemon Thyme, of each two ounces; Lemon peel cut very thin and dried, and Sweet Basil, of each one ounce. Some add Bay leaves and Celery seed, a drachm of each. These may be dried and repounded together, then kept in closely stoppered bottles.

To Pickle Green or Red Capsicums.—Place the Capsicums in a jar; boil a dessert-spoonful of salt in a quart of vinegar, and pour it, while hot, upon the peppers; when cold place a plate on the jar, and tie over it bladder or leather. They will be fit for use in a few weeks.

To Preserve Truffles.—Being dug 8 or 10 inches below the surface of the earth, they require a good deal of washing and brushing before they can be applied to culinary purposes. When washed, the water should be warm, and changed frequently. Truffles lose much of their flavour if allowed to get dry. Pick out the blackest and the freshest gathered, peel them carefully with a sharp knife, reject all which are the least unsound, put them into bottles as close as they can be shaken, cork them tight, and boil them for an hour in the "bain-marie."—M.

HANDBOOK OF RURAL SANITARY SCIENCE.

This useful manual contains a series of essays on sanitary matters in rural districts in which the laws of health are explained in clear and succinct language. The first five chapters which are from the pen of Mr. C. F. Gardener treat of the best means of securing purity of air both in and around dwellings, the disposal of sewage and other pollution, the supply and storage of water and sanitary legislation and administration. The next chapter is written by Dr. Berry, of Wigan, and to a great extent repeats what Mr. Gardener has already written in greater detail. Mr. C. N. Cresswell, who is a barrister, follows with a chapter on the legal aspect of sanitary matter, and shows how much still remains to be done by our lawmakers towards improving the health of our rural population. Mr. Hennell, C. E., contributes a chapter on the relations between rural sanitary authorities and the central government; and the editor, Dr. Lory Marsh, winds up with a series of notes on river pollution, the evils of cesspools and kindred subjects. For any one who intends building either in town or country this little manual is indispensable.

Tender Cucumbers.—It is hardly too much to say that in nine cases out of ten in large gardens, as well as small, Cucumbers are not cut until they are a long way past their best. Two-thirds grown is about the best size for Cucumbers. Beyond that stage they deteriorate. It is somewhat surprising that they should be allowed to do so; for Cucumbers are invariably sold singly, by the brace, or by number; none, unless pickling ones, are sold by pound, stone, bushel, or ton. Neither is there any loss of weight by cutting Cucumbers early. On the contrary, there is a great gain. The earlier the fruit is cut, the more will be produced, and the longer the plants continue bearing. There is nothing like early cutting for perpetual fertility. Each fruit removed at one-half or three-quarter size, is succeeded by two or three more. A second fruit will almost be fit to cut before the first would have been removed under ordinary circumstances. Early cutting also maintains the plants in the highest health and fullest strength. Of course, no one thinks of ripening Cucumbers, unless for seed. But there is much strain on the plants a long time before perfect maturity. By early cutting we almost hinder the seeds from being formed at all, and this also conserves the quality of the Cucumber. For it cannot have failed to attract notice that the finest flavoured Cucumbers are those without seeds. Seed-bearing is fatal to tenderness, crispness, and sweetness. For this additional reason we would therefore advise the early cutting of Cucumbers. It is well, also, to pick off all the male blossoms as soon as they appear. This would effectually prevent seeds being formed. Cucumbers without seed are more uniform in size and more delicate in quality than those producing seed. It used to be thought that Cucumbers would not grow freely unless they were impregnated. This is quite a mistake. They swell equally well, and in fact are better for eating, if all the male flowers be removed from the first. There is yet another plea for small Cucumbers. They can hardly be eaten too fresh. Cut and eat at once, should be the rule. Almost the smallest household can eat up a small Cucumber at a meal or in a day. A large one would last several days or perhaps a week. From the moment it is cut it begins to deteriorate, and by the time that it has been cut several days a Cucumber is hardly worth eating, becoming stale, flaccid, or insipid.—D. T. Fish.

Laxton's Supreme Pea.—This is one of the best of Peas for a general crop. Grown two years here side by side with Dickson's Favourite, it bears about as well as that variety, the pods are large and well filled. Veitch's Perfection and Ne Plus Ultra are complete failures this season, while last year they were all that could be desired.—W. W., *Rylehurst.*

Early Dwarf French Beans.—On the 27th April I sowed Negro Long-pod, Sir J. Paxton, Fulmer's Forcing, and Osborn's Forcing, side by side. I began gathering from Sir J. Paxton on the 13th inst. This sort was four or five days earlier than the others, and more than a week earlier than the Negro Long-pod. —John Garland, *Killerton, Exeter.*

Kohl Rabi.—This obtains increased attention every year. It is not an article of the Jewish faith, but a Brassicaceous plant that forms a kind of bulb or swollen stem intermediate between a Cabbage-stump and a Turnip, and marked all over with picturesque gashes or scars as if it had been in the wars; To grow a good crop of Kohl rabi requires a heavy soil that was well prepared in autumn; indeed, the soil cannot be too good for it. The seed is sown in March, April, and May, and it is customary to plant out from the seed-bed in showery weather. When sown where they are to stand, the rows should be 2 ft. to 2½ ft. wide, and the plants are ultimately thinned to 15 inches. It is very hardy, very nutritive, seldom fails, and, all points considered, is a better-paying food crop than Turnips. As a garden crop, Kohl Rabi is not without its value. Grown quickly, and taken up small and boiled without being pared, then pared and buttered, it is a delicious vegetable. The purple variety is a mere curiosity; if a profitable crop be wanted, the green variety only should be grown.—"Pictorial World."

ALPINE LYCHNISES.

These are very few in number, the species mostly growing in the meadows or hedges. There are, however, at least two which are among the most beautiful flowers in the Alpine flora—L. alpina and L. Lagascæ; the last is the most brilliant. It is a lovely rock plant with a profusion of bright rosy flowers, so abundant when the plant is healthy and in a fully exposed position, that they quite hide the leaves. From its brilliancy of colour and neat spreading habit it is well suited for planting in fissures on the high and exposed places in rocks, the colour telling a long way off; easily grown in firm sandy loam. Lychnis alpina is a Scotch and north of England plant, inhabiting very high crags, which is also worthy of a place among the dwarfer plants in the rock garden, where it is easy of culture. The better varieties of L. Viscaria are very effective, but as they thrive in borders, it is only where there is a large rock garden or a sparsely planted one that they need be used on the less carefully prepared lower portions. V.

The Site of Northumberland House.—Surely the cry for gardens on the site of Northumberland House is unwise, considering the long string of gardens on the Thames Embankment, the breezy river, and the wide and wellplanted open space of Trafalgar Square, which may easily be converted from a stony desert into a garden. Let us have many gardens by all means, but let us not forget that gardens as well as houses may be wrongly placed. Also we should remember that the highest effects in cities are obtained by the association of noble buildings with trees as may be seen in various parts of St. James's Park, and in the little gardens in the Place du Carrousel in Paris. The space here is wholly insufficient to produce anything effective in the way of gardens more than will be afforded by the line of trees planted there, whereas it affords a noble opportunity to the architect. The space is probably worth for building purposes more than £12,000 a year, and if any of this could be afforded for the making of new gardens more good would be done by forming an oasis in some crowded part of London, now without any of the advantages of the spot in question.

A Frost-escaping Walnut.—At the moment of writing (June 25), says M. Carrière, in the last number of the "Revue Horticole," the Noyer St. Jean (Juglans serotina) is only just opening its buds, showing that it fully merits the title popularly bestowed on it, the young fruit appearing about July 6. The consequence of this lateness of habit is that these Walnut trees yield fruit in abundance throughout the year, which is far from being the case with most of the other varieties, which are frequently frozen every winter, or which do not bear, owing to the cold, although they may not actually freeze, the young fruit either falling off or not making its appearance at all. An instance of this occurred during the present year, the young fruit having fallen from all the Walnut trees in the Jardin des Plantes, although they were not actually frozen. Why, then, it may be asked, especially when the Walnut is grown as a profitable crop, do not growers plant nothing but this species, which always gives an abundant crop?

THE BIBLE FLOWER MISSION.

At this season of the year, when our gardens are bright and fragrant with flowers, our thoughts naturally turn to the sick poor of London, who are lying in pain and weariness during these long summer days in the ward of an hospital, or to those even more to be pitied who have lain, perhaps for years, in the infirmary of a workhouse, and to whom the gift of a little of our floral abundance would indeed "make sunshine in a shady place." The commencement of the Bible Flower Mission is thus described:—"Early in the spring of 1874 a Snowdrop, Primrose, and two or three Violets, which had been casually enclosed in a letter to an East-end worker, were passed round a sewing-class of 200 poor old widows 'for each to have a smell,' and then divided and given to three people whose time here was but short. From that time flowers were collected through the medium of 'Woman's Work,' &c., and during the season distributed by the ladies at the Home of Industry among the sick in the neighbouring courts and in different hospitals." The work thus begun has gone on steadily since, and would, we are convinced, be greatly increased if more people knew of the existence of such a Mission. Is it much for us who live in the midst of gardens and fields to spare a few flowers to brighten the day of some poor sufferer, even at the cost of a little self-denial? Think what a glorious thing a fresh, bright Rose must be to one who has not for twenty years seen a flower! Those who have sick friends know what an acceptable gift a few flowers are, even to the wealthy. What visions of soft summer air, of cool country breezes, of fresh green fields the little bunches of flowers carry with them into the close, dull wards of a London hospital. From all parts of the country contributions have been sent to this Mission. Sunday-school children gathered flowers in Welsh lanes, and some regular contributions came every week from Cornwall. Girls cultivated their little gardens at school, and little children sent flowers from their own plants. Invalids gave flowers from the knowledge of their value to themselves, and one who had little money sent threepence a week to be spent in the purchase of bunches of Violets or whatever was most plentiful. One lady suggested the sale of some choice flowers she possessed, and that the money thus obtained should be given to the Mission as of more practical use than her flowers could be; for the poor prize a few Violets or Primroses, nay, even a little bunch of Cowslips or Buttercups, more than the choicest exotic. Who can tell what visions of early days these flowers bring with them to the country born? Days of innocence, and peace, and happiness, such as they never know now in their later life. In one neighbourhood, about twelve miles from London, a lady resolved this summer on opening her house every Wednesday afternoon as a local depot for the Flower Mission. The gardens of the place are small, and few of the people living in the place could gather enough flowers to send to London, but on the principle that "many a little makes a muckle," the local depot has been very successful. Since April 5000 bunches have been forwarded to the central depot, Laurence Pountney Hill. Primroses and Violets were first sent, then flowering shrubs, and now Roses. Some persons bring their flowers made into bunches, others send a few stray flowers, and some ladies give up their Wednesday afternoons to make these up into bunches of the right size. These are placed in water for the night and kept in a cool place, and next morning they are quite fresh and are taken to London early. Will no one else undertake a similar work? To every bunch of flowers sent out by the Bible Flower Mission a text is attached. It is written clearly on a card, in which a hole is cut and the bouquet inserted, so that the bright flowers carry with them gracious promises and words of entreaty—messages of love and of warning such as might never have reached those who receive them but for the Flower Mission. Many who cannot send flowers can prepare these texts, and to many invalids it has been a delightful occupation. The cards can be cut out of a plain calling card, or Unwin Brothers, 109a, Cannon Street, London, E.C., supply them ready for writing on at a very trifling cost. Full directions for preparing the bouquets or for making the text-cards can be found in a little penny book also supplied by Unwin Brothers, and a very interesting account of the Mission is given in a threepenny pamphlet, "The Records of the Bible Flower Mission," to be had at the Conference Hall, Mildmay Park, London, to which we are indebted for many of the facts mentioned in this paper. The work has, however, greatly increased since the book was written in September, 1875. If any readers of The Garden will give any assistance in this work of kindness and thoughtfulness for others, the flowers will gladly be received by Miss Bewsher, Hon. Sec. of the Bible Flower Mission, Central Depot, 9, Laurence Pountney Hill, E.C., close to Cannon Street Station. There are several other depots in London named in the books before mentioned, and there are also others at Hull, Leicester, Edinburgh, Glasgow, Dumbarton, and Ayr. B.

NOTES AND QUESTIONS—VARIOUS.

Golden Bamboo in Flower in Devon.—A flourishing plant of Bambusa aurea is now in full bloom in my garden under a south wall, where the subsoil is stiff clay. This plant I obtained from Messrs. Roy and Co., of Paris, in March, 1875; it is the first instance in which a Bamboo has flowered in my garden.—H. F. Ellacombe, *Clyst St. George, Topsham.*

Autumn-sown Onions.—I have been in the habit of sowing Danvers' Yellow Onion in August along with the Tripoli, and find that it stands the winter well; and, when ripe, keeps well, which the Tripoli does not. As the Onion fly is such a pest in some gardens, the hint by Mr. Groom in The Garden (p. 92), of autumn-sown Onions escaping it, may induce growers to sow this variety. Danvers' Yellow grows large, and is a very distinct and excellent Onion for a general crop, whether sown in autumn or in the spring.—William Tillery, *Welbeck.*

Fillbasket Pea.—Of this Pea I can speak more favourably this year than I did last. Except a few rows of Ne Plus Ultra, which, though a tall grower, has always been my summer marrow Pea, I have grown nothing else this year than Fillbasket as a summer Pea. I sowed it in December, 1875, along with Dickson's First and Best. It stood the winter and spring well, and I have followed on with these all through the summer so far. Its height is 3 ft.; you can grow four rows of Fillbasket in the space required for two rows of Ne Plus Ultra, thus getting eight times the produce, because Fillbasket grows quite twice as many Peas in a row as Ne Plus Ultra.—P.

Artificial Variegation.—Cultivators would do well to note the fact that variegation may in many cases be communicated to a perfectly green-leaved plant by budding it with variegated scions. This practice is nearly always successful in the case of Abutilons, and it has also succeeded in that of the Ash, Sweet Chestnut, Horse Chestnut, Maple, Jessamine, Oleander, and Passion-flower. Even when the buds die or refuse to "take," as it is termed, they often communicate variegation to the stock. Professor Morren induced a green-leaved Abutilon to become variegated by merely inserting the leaf-stalk of a variegated leaf under the bark.—B.

Asparagus as a Table Plant.—The common Asparagus grown in pots makes, according to "The Florist," a pretty plant for table decoration. The roots should be potted in 5-in. or 6-in. pots, in a compost of well-enriched sandy loam, and placed on the front stage of a warm house; and the earlier shoots may be cut for use, if drawn up by covering the crown with an inverted pot. One shoot only should be allowed to grow, either the strongest or a weak one, as large or small plants may be desired. As soon as the foliage begins to open, the plants should be placed in a cooler part of the house, to harden off a little; and from thence may be taken in-doors, as required. The foliage being of a bright rich green, and the plants forming a cone of foliage, they are, when aden with berries, really beautiful.

No. 246.] SATURDAY, AUGUST 5, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ROSES FOR THE SEASIDE.

THERE must be many whose lot in an island like this is cast in sea-side towns, and who yet have the love of a garden implanted in their nature; to such I would write a few words of encouragement, as from experience I am convinced that, if only a real love of flowers be present, success will in the end crown their efforts. Like many others, I lamented the impossibility of growing Roses in such a situation, and, gazing on the smoke-begrimed, wind-blown, moribund standards and climbing Roses that disgrace the gardens in the immediate neighbourhood of the town and sea-shore, I felt convinced that the queen of flowers had deserted part of her legitimate domain. At last, fired by a determination to have some good Roses or die in the attempt, after careful inspection of the various sites I could find in a garden sloping steeply to the sea, and overshadowed by trees in the sunniest parts, I chose a place, not more than thirty yards from high-water mark, where some shrubs broke the force of the sea-winds, and there made a bank sloping to the south-east. This was properly prepared with fresh soil and rotten manure, and the Roses, dwarfs on the Manetti or Brier, were duly planted, pruned at the end of February, and protected by some Furze branches from the violence of the winter-winds. The consequence was that they began to grow very early, and as the late spring was very severe that year, most of my Roses died, and all had a struggle for bare existence. The next year, warned by experience, I pruned very late (in the end of March or first days of April, according to the season), and in May, when the young shoots and foliage were 2 in. or 3 in. long, I placed a band of canvas 18 in. high on the sea side of my beds; this proved a most efficient protection, as all the Roses had been pegged down close to the ground, and in June, when the leaves became firm, and the flower-buds swelling, it was removed. The bloom that year was far superior to anything I had dared to expect, and from that time to this, by eliminating those varieties that will not succeed under such conditions, and trying fresh sorts and experiments, the quality of the flowers has improved. The chief points, then, to be insisted on as peculiar to sea-side treatment of Roses, are late and severe pruning, sacrificing something of the summer bloom, so as to ensure the growth being made as late as possible, protection during May and most of June only, and carefully pegging the Roses down in the case of strong-growing varieties, so as to ensure the sea-breeze blowing over their heads. The next thing is to give a list of the names of those Roses that have succeeded, and also to mention some of the well-known old favourites that have failed, as in spite of all care some refuse to grow or flower, while, happily, others thrive in a manner quite at variance to the descriptions given of them in catalogues most reliable for inland gardens. As a rule I remark that light-coloured Roses do best near the sea and smoke, as the dark ones often turn purple and discoloured under a sea-breeze or a wind that brings the town smoke over them. In the following list the Rose that succeeds best in its colour is put first, and so on in proportion:—

Hybrid Perpetuals.

Red and Crimson.
Mario Baumann
Madame Clémence Joigneaux
Madame Victor Verdier
Duke of Edinburgh
Dr. Andry
Horace Vernet

Rose-coloured.
Madame Boil
Marquise de Castellane
Edward Morren
François Michelon
Paul Néron
Monsieur Noman

Dark-coloured.
Xavier olibo
Louis Van Houtte

Light-coloured.
Baroness Rothschild
Madame Lacharme
Madame Thérèse Levet
La France
Marquise de Mortémart
Prince of Wales
Boule de Neige
Captain Christy

Among Bourbon Roses the old Souvenir de Malmaison and Sir Joseph Paxton are specially hardy, and Aimée Vibert alone among Noisettes. Of Tea Roses it is needless to say that the invaluable Gloire de Dijon succeeds when well pegged down; its failing being that it is inclined to grow too early in spring. The following also do well when well sheltered:—

Tea Roses.

Adrienne Christophle
Boule d'Or
Catherine Mermet
Cheshunt Hybrid
Goubault
Josephine Malton
Madame Falcot
Madame Willermoz
Marie Ducher
Perle de Lyon
Regulus
Sombreuil

It is curious to notice how many "old friends" fail us by the sea; General Jacqueminot, Jules Margottin, Charles Lefebvre, all the Victor Verdier race, Alfred Colomb, and Sénateur Vaisse refuse to produce even decent blooms with me. If any friend could give a reason why Marie Baumann and Edward Morren should thrive, and Alfred Colomb and Jules Margottin refuse to flourish, I should feel much obliged; perhaps a knowledge of their pedigree would help to solve the mystery. Last autumn, finding that all my attempts to make the more tender Noisettes (such as Maréchal Niel, Lamarque, and Triomphe de Rennes) succeed entirely failed, I put up a glass coping, 2 ft. wide, on the top of a wall 5 ft. high, facing east, and glass screens at each end of the coping to prevent the east wind sweeping along the wall. Under this protection I planted in a rich border Maréchal Niel, Lamarque, Souvenir d'un Ami, Perle de Lyon, and other good Roses, and they have grown and flowered with such wonderful luxuriance (when they would not have lived there without this slight protection), that I feel inclined to recommend its trial by all those who, like myself, live in exposed situations. Occasional syringing and watering in dry weather are needed, as the coping keeps off some of the rain from the border close to the wall. If anybody who reads this tale of success and failure be tempted to try and make Roses grow where they had not grown before, my object will have been achieved. E. H. W.

MY DIARY FOR SEVEN YEARS.

By J. DENNING.

[CALENDARS of gardening operations, though very essential, are apt to become monotonous from having been carried out for many years in exactly the same form. They indeed resemble each other so much that they are sometimes supposed to be merely slightly varied repetitions of what has been written for years previously. It occurred to us, therefore, that the publication of a diary of actual daily work in a first-class garden would not only be desirable as a change, but also most valuable as the best guide to the best practice. Mr. Denning, superintendent of Lord Londesborough's gardens at Coombe Lane, Norbiton, agreeing with the idea, at once placed his diary at our disposal. From it we have selected the entries for seven recent years, for the sake of securing a greater variety of work than if only one year were given. The diary includes operations in different gardens and positions, which will make it all the more useful. We propose, henceforward, to publish it every week, for the dates corresponding to the days of the week following the date of our issue. Mr. Denning's name is already well known to many of our readers as one of the very best cultivators in many branches of horticulture, and we feel assured that the publication of his record of the work done in the well-managed gardens under his charge will prove useful to many.—ED. GARDEN.]

August 1.—*Sowing*—Tennis Ball, Bath Cos, Neapolitan, and Drumhead Cabbage Lettuce, Radish, also winter Cucumber; and Mignonette in pots (should have been sown 14th July). *Potting*—Young scented-leaved Pelargoniums, Balsams, and Carnations; also Strawberries. *Cuttings* of variegated Pelargoniums, named Cinerarias, scented Pelargoniums, including small-leaved sorts, and Centaurea; put in also tops of Poinsettia pulcherrima under hand-glass in Orchid-house. *Planting*—A good breadth of Endive, Cauliflower, and Grange's Broccoli. *Miscellaneous*—Staking Chrysanthemums, dwarf Dahlias, Calceolarias; staking last Peas; tying in Gardenias; nailing Apricots. Shifting Primulas, and old stools of Poinsettia. Gathering Apricots, Peaches, Nectarines, Melons, Grapes, Strawberries, Goose-

berries, Apples (first), and Roses; took up early Potatoes. Cut down Pelargoniums; going over fruit trees again; discontinued fire to Vinery in fine weather, removing dead blooms from flower garden, putting in order Cattleya house; cleaning walks, Rose circles, beds, &c., in pleasure ground; washing Orchid-houses; exposed fruit on late trees in Peach house; cleared away all potted French Beans. Making Leek trenches, &c.; clearing Pea ground for Strawberries; layering Strawberry plants for planting out-of-doors; preparing for potting Strawberry plants; preparing Mushroom bed; earthed up all Broccoli; digging ground for Wallflowers, hoeing among Roses for distilling; clipping hedges; stopped fire during day in two Hamburgh houses, and stopped throwing moisture on floor.

Aug. 2.—*Sowing*—Schizanthus (three sorts) and latest Balsams. *Potting*—Young Strawberries for planting out, consisting of Garibaldi, Keen's Seedling (six rows of each), President, Dr. Hogg, Oscar (one row each), Eclipse, Sir Harry, Hautbois, Elton Pine (one bed each), and a few Black Prince, British Queen, and Sir Joseph Paxton; likewise last-sown Cinerarias and Carnations. *Cuttings* of Bijou Pelargonium, Coleus, and put in Alternanthera. *Planting*—Leeks in trenches; layering Strawberry plants. *Miscellaneous*—Pricking-out Cabbage sown in heat. Setting Melons in last pit. Shifting Primulas into flowering pots, Wigandias into 8-in. pots, also Stocks; and parted and re-potted Caladiums. Matting Red Currants on walls. Staking and tying Dahlias and blue Larkspurs; putting wired stakes to conservatory Mignonette. Gathering Downton Cherries from a standard tree and pulling up Onions; cutting Lavender. Cleaning roads, trimming up flower garden and Ivy in rock garden; hoeing amongst plants in borders; sanding walks on terrace; turning old bulbs out of their pots. Digging ground for Spinach; earthing-up Broccoli; watering outdoor Mushroom bed, also Cauliflower, Celery, Lettuce, Vegetable Marrow seed-beds, and Radishes.

Aug. 3.—*Sowing*—Radishes and Lettuce. *Potting*—Strawberry plants, finishing with Sir Charles Napier; potting some Stocks and Wallflowers for spring, three in a pot, and also second-sown Stocks for stands. *Cuttings* of Mimulus, also Iresine and Alternanthera put in. *Planting*—Making good blanks among latest-planted Cauliflowers; layering some Anne Boleyn and other Pinks. *Miscellaneous*—Wiring Chrysanthemums, staking Gladioli, matting some Gooseberries and Currants, and nailing Apricots. Shifting Anne Boleyn Pinks that had been layered, seedling Cinerarias into 6-in. and 8-in. pots, Salvia argentea into 6-in. pots, and moving herbaceous Calceolarias to shady place in frame. Gathering Champagne Gooseberries and Red Currants for preserving; pulling off all old Beans from first and second crops of French Beans. Cleaning and pruning Roses; putting gas-tar about Apricot trees to keep rats and mice away (spoils Peach fruits, does not seem to hurt Apricots). Earthing-up early Celery again, digging Winter Green seed-beds for Endive, hoeing among French Beans, and thinning Mignonette.

Aug. 4.—*Sowing*—Tripoli Onions. *Potting*—Intermediate Stocks, and potting off all forcing Strawberry plants. *Cuttings* of Pelargoniums, consisting of Beauty, Mangles' Variegated, and scented-leaved sorts; put in also Iresine and Alternantheras. *Planting*—Lettuce and Endive, also planting out some Stocks and Wallflowers, and more Chrysanthemums and Pinks. *Miscellaneous*—Tying and staking Peach-house trees, also Chrysanthemums, and Dahlias; matting some Red and White Currants. Shifting Heliotropes from 5-in. to 7-in. pots; moving Tree Mignonette out-of-doors; shifting President and other Strawberry plants into their fruiting pots; first Cinerarias &c. Washing Orchids. Gathering Red Currants, taking up Garlic and Shallots, gathering Walnuts for pickling, taking seed from Mignonette; fruits ready for dessert, consisting of Grapes, Melons, Peaches, Nectarines, Apricots, Cherries, Apples, Pears, Strawberries, Gooseberries, Plums, and Currants. Cutting down Pelargoniums; thinning Chicory; clipping Yew hedges, also extra tall shoots from Ageratums; cutting off Hollyhocks 16 in. above stakes, removing faded Sweet William stems; stubbing up all Winter Green seed-beds, cleaning off Spring Cauliflower land; looking over Orchids for yellow thrips; cleaning up mixed borders and walks. Earthing-up Brussels Sprouts and three rows of Celery; manuring land for last Turnips; digging ground for Onions, Cauliflower, and Broccoli; preparing a frame for cuttings, also a border for Pelargonium cuttings; watering Rhododendrons and Peach-houses; removing spare netting from trees and Strawberries.

Aug. 5.—*Sowing*—Endive, this sowing when planted should not be put under a wall, wanted for spring crop; sowing second Intermediate Stocks. *Cuttings* of variegated Pelargoniums, and also of Stocks put in. *Planting*—Wallflowers, also July-sown Bath Cos Lettuce, and some Paris Cos and Ne plus Ultra Cabbage Lettuce; planting out Celery in broad trench. *Miscellaneous*—Netting Gooseberries. Shifting standard Heliotropes and scented Verbenas; syringing sulphur off out-door Peach trees. Getting all old bulbs from pots together and putting them into Vinery; gathering Gooseberries for preserving. Putting Shallots and Garlic in loft; lifting Myatt's Prolific Potatoes for seed. Pulling up Peas (were ready to pull up on July 20 or a week before). Rolling terrace, clipping hedges, clearing away Nettles and rubbish among Laurels and other shrubs. Clearing land for winter Spinach and Endive; digging Potato-ground for Turnips. Painting orchard-houses and Peach-houses. Watering crops of latest-sown Beans.

Aug. 7.—*Sowing*—Nemophila; also main crops of Prickly Spinach; Veitch's Incomparable, Reliance, Imperial, Queen, Little Pixie, Enfield and Red Cabbages; Walcheren Cauliflower; Snow's and Osborn's Broccoli; Tripoli Onions; and Cucumbers. *Potting*—Sir Joseph Paxton Strawberry for forcing; potting off winter Heliotrope cuttings; potted up Calla æthiopica. *Planting*—A few more Cauliflowers, and some more Curled Endive; also a large breadth of Coleworts; Brompton Stocks and Wallflowers; layering Carnations; layering Strawberry runners for planting. *Miscellaneous*—Staking and tying dwarf Chrysanthemums; tying and nailing Peach trees; nailing Tomatoes. Putting some Amaranthus into houses; transferring Heaths, Aphelexis, and Phœnocomas from conservatory to open air; putting Balsams in conservatory, also fifteen young standard Heliotropes and six pots of Sweet Peas. Gathering Peaches, Nectarines, Blue Perdrigon Plum, Elton Pine Strawberries (the only ones now), and Raspberries; putting Shallots into loft; lifting Milky-white Potato; cutting all Grapes in second Hamburgh-house; they have not coloured well, too heavy a crop, and not thinned enough. Examining wall trees and Vines for insects; clipping hedges; cleaning and sanding walks; hoeing and cleaning ribbon border, and first-sown Pea land, and making it ready for other crops; also old Strawberry land, early Turnip land, early Potato land, early Cauliflower land, and Winter Green seed-beds; autumn Onions ready to pull, so that this land might be had if wanted. Earthing up Winter Greens and 1st May-sown Cauliflower; putting soil on Mushroom-bed; adding a little soil to four rows of Celery; spawning first Mushroom bed, and soiling it; turning manure for Cucumbers. Giving air to Hamburgh Grapes until six o'clock to keep them cool, all being black.

Aug. 8.—*Sowing*—Atkins's Matchless, Shilling's Queen, Dwarf Early York, Cattell's Reliance, Enfield Market, Little Pixie, and Early Burns' Cabbage, also Red Cabbage; Walcheren, Early London, and Frogmore Forcing Cauliflower; Tripoli Onion; Stone and other Turnips; Radishes; also 100 pots of Newington Wonder and Fulmer French Beans. *Potting*—Cinerarias and Wigandias; finished potting President Strawberries *Planting*—Endive and Lettuce, latest sown, the latter in trenches; planting three rows Veitch's Autumn Giant Cauliflower and three rows Cooling's Broccoli; also some second Endive (broad-leaved); layering Strawberry runners for planting; pricking-out Wallflowers; preparing ground for pricking-out Stocks. *Miscellaneous*—Hanging up Phalænopsis Lowi in baskets. Began washing Cattleyas; syringed Azaleas with Gisburst for thrips. Watering Celery every three days. Putting Tripoli Onions in loft; getting Shallots and Garlic under cover. Looking over wall trees and espaliers and flower beds; stopping Perilla where necessary; looking over Figs for bug; picking off seed-bearing stems from Pelargoniums; fumigating Orchids for red thrips; earthing-up latest-planted Broccoli and French Beans under wall; lifting Prolific Potatoes; digging land for July-sown Cabbage.

Aug. 9.—*Sowing*—Prickly Spinach (5 lbs.), Tom Thumb, Bath Cos, All the Year Round, and Victoria Lettuce. *Cuttings*—of Punch, Wensleydale, Tom Thumb, Trentham, and Minnie Pelargoniums putting in; also scented Geraniums. Layering runners for next Strawberry bed; finishing potting Strawberry plants. *Miscellaneous*—Moving some Azaleas under temporary structures while painting greenhouse; re-arranging East Indian house; shifting second Victoria Stocks into 48-size flowering-pots. Left off syringing Orchard-house, and put plenty of air on all day. Cutting superfluous shoots from Vines. Thinning last-sown Turnips. Semper Fidelis Raspberries bearing beautifully. Top-dressing Mushroom bed and putting dry Hay on it. Making ground ready for Spinach.

Aug. 10.—*Sowing*—Mustard and Cress, Radishes, and a long border of Prickly Spinach. *Potting*—Calceolarias and latest Balsams. *Cuttings* of Salmon, Minnie, Dr. Lindley, Victor Emanuel, Mrs. Pollock, and Beauty Pelargoniums put in; also of Coleus and Pansies. *Planting*—Endive, in deep drills, sown July 11. Planting Lettuce under wall, sown July 11, also some Cabbage sown July 1. In the event of failure in the case of July-sown Cabbage, planting some small plants of April-sown Little Pixie, Hill's Incomparable, and Fearnought. Planting some Lettuce sown June 24, and thinning the bed. *Miscellaneous*—Tying Dahlias again, also Polygalas and Chorozemas, &c.; tying Peach trees; staking Chrysanthemums; nailing trees and Tomatoes. Shifting scented Pelargonium cuttings

into 48-sized pots; also May-sown Cockscombs; putting also Maxillarias into Cattleya and Dendrobium house; also Dendrobium Bensoni and crystallinum half in Odontoglossum and half in Cattleya house; gather in Chilies, Gherkins, and French Beans for pickling; cutting last Perfection Melon; first Peach gathered from orchard house; gathering Apricots; sent in 30 lbs. Gooseberries. Figs ripening pretty freely. Earthing up winter Greens; cleaning scale off Stephanotis; fumigating greenhouse for thrips; stopping Vines; cleaning up, sanding, and salting walks; clipping Box edgings; cutting Laurels. Giving Parsley lime, soot, and guano; top-dressing Roses in pots; plunging tree Mignonette. Grapes not colouring well, too heavy a crop. Preparing soil for Intermediate Stocks; making border ready for Cabbage, Cauliflower, and Lettuce seed; drying herbs. Watering flower garden again; also Peach trees out-of-doors, mulching afterwards with hay. Watering third Peach-house, giving eighteen potfuls to a tree; giving Scarlet Runners guano-water, twenty potfuls to a row.

Aug. 11.—*Cuttings*—of Arabis albida variegata, Pansy (under hand glass) scented Verbenas and Pelargoniums put in. *Planting*—June-sown Endive, that sown in July having failed; Parsley. *Miscellaneous*—Tying Salvia splendens, tying up Lettuce; nailing Tomatoes in orchard-house. Netting Jargonelle Pears and late Gooseberries; removing nets from Raspberries. Shifting intermediate Stocks and Carnations (3 sorts). Washing Odontoglossums and Cattleyas. Sent last Strawberries and Gooseberries in to-day. Beginning to remove breastwood from Apple and Pear trees; cutting down Pelargoniums; earthing up Beans under walls; rolling all walks after rain having first cleared them of weeds; putting wharf-sand on walks; clipping Box edgings; finishing layering Strawberry runners for planting; digging land for latest Turnips; making ground ready for Leeks; getting up nine loads of manure for Violet bed and Mushroom bed; getting cool-house pipes joined to boiler; drying Basil, Mint, Thyme, Sage, Hyssop, and Penny Royal (Marjoram afterwards); Grapes seem to colour best with a night temperature of from 65° to 70° with air, and a day temperature of 75° with air. Watering third Peach-house trees.

Aug. 12.—*Sowing*—Syon House Cucumber; Mignonette (100 pots); Phlox, Nemophila, Clintonia, Lobelia, and Rhodanthe. *Potting*—100 pots of Violets; also summer-struck Pelargoniums into 48-size pots; potting off winter Cucumbers. *Cuttings*—of Rival Stella, Cloth of Gold, and Scented-leaved Pelargonium put in; also Alternanthera. *Planting*—Some Endive, also Rockets. Layering Strawberry runners, viz., 300 Garibaldi, 300 Sir Harry, 300 Keen's Seedling, 200 British Queen, 150 Sir C. Napier, 150 Black Prince, 150 Hautbois. Blocking or basketing fresh Orchids. *Miscellaneous*—Tying Polygalas. Finishing staking old and rather large Chrysanthemums; nailing Tomatoes. Netting late Vinery. Shifting spring-struck scented Verbenas. Washing Cattleyas. Watering Peach trees outside and Rhododendrons. Cutting Lavender; sent in first Celery, also Pears, viz., Citron des Carmes and Doyenné d'Eté; and Transparent Apple; sent in a basket of Morello Cherries, 13 lbs. Plunging Tree Carnations and Cloves. Cutting Portugal Laurels. Making drills ready for Spinach. Clearing away first French Beans for Endive; and digging in front of Fig-house ready for Endive. Getting up manure for autumn supply. Keeping Melons from 70° to 75° at night, and from 75° to 80° by day; East Indian Orchids from 73° to 75° at night, and from 78° to 80° by day, with fire heat, and 90° under sun heat; Cattleyas, 70° at night, and 75° by day with fire heat, and from 85° to 90° with sun heat; Odontoglossums (no fire heat), 60° at night, and from 65° to 70° by day.

A Spading Machine.—A trial was made last week on Van Rensselaer Island, below this city, of a spading machine, constructed, after three years' experiment, by the late Mr. W. E. Bleecker, of New York, and during the year since his death by his son, Mr. H. Bleecker. The work is done by a number of forks, each of two tines, worked by cams inside the drive wheels, which are enclosed to prevent choking by the displaced earth. The movement of the forks is somewhat similar to that of the forks on a hay-tedder. They enter the ground in front of the main shaft, and are thence carried back, lifting the soil very much as is done by the ordinary spading fork, and leaving the ground in precisely the same condition. The trial machine spaded a strip 3 ft. wide and over 8 in. deep, as fast as a pair of horses could walk; but the displacement of so large a quantity of earth (equal to three furrows 12 in. wide and 8 in. deep) was too much for an ordinary team, and three horses were needed for this amount of work. The quality of the work was, in the opinion of those present, all that could be desired, leaving the field like a garden.—"Country Gentleman."

THE FRUIT GARDEN.

PREPARING STRAWBERRY PLANTS FOR FORCING.

In almost every garden establishment this is a very important matter, and growers are pretty nearly all agreed so far as to consider that young plants, that is, plants produced by the runners of the current year, are in all respects the best for the purpose of being forced into fruit during the early part of next season; and success in this matter depends very greatly upon securing and encouraging the healthy development of such plants as rapidly and early as is possible, in order that they may be thoroughly matured before the season has become too far advanced. In order to secure this desideratum various methods are practised successfully, although some of them are more troublesome in their details than is perhaps really necessary. A common way is to plunge the fruiting-pot, of some 5 in. or 6 in, in diameter, between the rows of fruit-bearing plants, such pots being filled with properly-prepared soil, and on the surface of which some of the earliest-developed runners are carefully placed and secured with a peg or small stone. Early runners thus secured generally root freely into the rich soil contained in the pots, and as soon as they are considered to be fairly established, the connection between them and the old plants is severed, and the young plants are removed to a suitable situation, and being already in their fruiting-pots they do not sustain any check by being re-potted. There are, however, objections to this method of securing plants for forcing, as the plunging of the pots between the rows of fruit-bearing plants at a time when the fruit is either ripe or approaching that condition is inconvenient. In most gardens it is also necessary to cover plantations of Strawberry plants with nets to protect the ripe fruit from the ravages of birds, while dry weather very frequently sets in about this time, which renders frequent watering of the young plants in pots necessary, and the treading amongst the plants during the performance of this operation, the removing and replacing of the nets, &c., are apt to prove injurious to the fruit. Another method is to layer the runners into smaller pots, or pots of some 3 in. in diameter, filled with light, rich soil, and as soon as they have become well rooted to cut them from the old plants and re-pot them into their fruiting-pots, which should be about 5 in. or 6 in. in diameter, placing them in a favourable situation, well exposed to the sun, and keeping them well supplied with water. Now it is necessary that the plants should be in their fruiting-pots before the end of July, and if this can be accomplished at an earlier period so much the better. This is, perhaps, a better plan than layering the runners into their fruiting-pots at once. A better plan, however, is to use small pieces of freshly-cut turf some 4 in. or 5 in. in diameter; sink them slightly in the soil between the rows of Strawberry plants, placing the grassy side down, and on each piece of turf peg a strong runner, which will emit roots into it very freely, and will not so frequently require watering as plants in pots. These pieces of turf should, when the young plants have become well rooted, be carefully raised with the plants upon them, and potted in 6-in. pots. Where large numbers of plants are wanted, it might not be convenient to adopt this plan with the entire stock, but it might be resorted to with advantage in the case of plants likely to be required for very early forcing. The Strawberry season, or the period during which this fruit can be obtained from plants growing in the open air, is comparatively short, seldom greatly exceeding one month, or, say from about the middle of June to the middle or end of July, according to the season; but, by means of gentle forcing, or growing the plants under glass, the Strawberry season may be very considerably extended; attempts to produce ripe fruit at Christmas, or very early in the year, even when attended with success, are seldom worthy of what they cost. But with the necessary appliances little difficulty is experienced in having a supply of fruit of good quality from about the beginning of March until it is ripe in the open air, and this without having recourse to what may be considered very early forcing. Different growers have different methods of preparing the plants for forcing, and ometimes with equally good results. There is, however, one ircumstance upon which all are generally agreed, viz., that

young plants are almost always found to furnish the earliest and strongest runners, and on that account it is advisable to adopt the plan of planting annually as early as possible during July a portion of plants of the various kinds intended for forcing, and these plants should be cultivated for the sole purpose of supplying early runners for the next year's supply of plants for forcing. A piece of rich, light soil should be selected, and the different sorts should be planted out in lines at considerable distances apart, say not less than a yard, so as to prevent the different runners becoming mixed. Such plants should not be allowed to bear fruit; on the contrary, they should have the flowers carefully picked off, a practice which tends to promote the production of early and strong runners. The somewhat wide space between the lines of plants will now be found to be convenient for the purpose of plunging the pots intended to receive the runners, which should be secured on their surface if this method be pursued; or if preferred, the use of the pots for this purpose may be dispensed with altogether, and the space between the rows of plants should, as soon as runners are about to be produced, be well loosened up, and should at the same time receive a surface-dressing of leaf-soil, or some similar material, to facilitate the rooting of the runners into this soil. When this has taken place to some extent, they should be carefully lifted with a portion of the soil adhering to their roots, and at once potted into small pots and placed for a week or ten days in a close frame or pit. By the end of that time they will be found to be well established in their pots, and may then be fully exposed to the open air, when they should be well supplied with water during dry weather. As soon as the pots are well filled with roots, the plants should be transferred to their fruiting pots, which should be about 6 in. in diameter. Pots of this size being found to be the most suitable for this purpose, they should be placed upon or plunged in a bed of cinder ashes, old tan, or tree leaves, in a suitable and well exposed situation, when they may generally be allowed to remain until they are placed in the forcing house, keeping the surface of the pots free from weeds, and giving water when necessary. The young plants should be fully matured by the end of October, when it may, during some seasons, be necessary to shelter them in some way from heavy autumnal rain. And they should also be protected from severe frost by means of a slight covering of straw, Fern, or other light littery material. Strawberries, when planted out-of-doors, generally succeed best in a somewhat stiff or even heavy soil. It is not, however, advisable to use mould of too heavy a nature for them when in pots, as such a soil is apt to allow the water to escape by the sides of the pots without thoroughly permeating the balls or reaching the roots. For potting, probably the best soil is turf, not exceeding 3 in. in thickness, pared from a rich loamy pasture. This should be stacked in layers, with an occasional layer of good, rich manure between those of turf; and when this compost has lain some twelve months, more or less, it will be in good condition for purposes of potting. When chopped up, it may have added to it a small portion of bone-dust, soot, or other material, with the view of further enriching it, should this be considered necessary; the pots used must be perfectly clean both inside and out, and as the area of a 5-in. or 6-in. pot is not great, and this size is found to be, in all respects, the most suitable, it is not advisable to occupy a greater portion of it than is absolutely necessary with drainage, although thorough drainage is of the greatest importance. This may nevertheless be secured by one crock or piece of pot-shred, which should be so placed as to cover the hole at the bottom of the pot for the exclusion of worms, and, at the same time to allow water to escape freely. This crock should be covered with a small portion of fresh Moss, which will prevent the soil from obstructing the drainage, and being of a somewhat enduring nature, Moss is better suited for this purpose than flakes of manure or other material, which soon decay. When the plants are potted into their fruiting-pots, care should be taken that the balls are not too dry; neither should the soil used for potting be by any means wet; on the contrary, it should rather be inclined to dryness, in order that the plants may be potted firmly, and the pots must not be filled too full of soil, or they will not retain a sufficiency of water to moisten the balls thoroughly; space must also be afforded for a surface-dressing of some enriching material, which should be applied when the plants are taken into the forcing-house, or as soon as they are about starting into growth. Little need be said as regards the sorts best suited for forcing, as most growers have their favourite varieties, and some sorts, even when grown under glass, succeed better in one locality than they do in others. For very early "work," however, Black Prince is still a general favourite, and although the fruit is small it is nevertheless abundant and of good quality; La Grosse Sucrée is by some considered very suitable for early forcing, and Keen's Seedling still holds its own, notwithstanding so many new and improved introductions; Sir Joseph Paxton has been found here to be one of the best forcing as well as for open-air culture; Sir Charles Napier is also an excellent variety, with a very pleasing sub-acid flavour, wich is much relished by some; it has likewise the very desirable quality of bearing carriage well, which renders it often very valuable. Dr. Hogg bears so close a resemblance to British Queen that it is unnecessary to force both sorts, and, of the two, I prefer British Queen for forcing, the former being, however, the less tender of the two, is best for open-air culture. The following half-dozen sorts are all very suitable for forcing, viz., Black Prince, Vicomtesse Hericart de Thury, Keen's Seedling, Sir Joseph Paxton, Sir Charles Napier, and British Queen. P. Grieve.

Culford Gardens, Bury St Edmunds.

Wireworms and Vine Roots.—I was asked a month ago by Mr. Ballantyne, of Walkerburn, to look at some recently planted Vines. On meeting the gardener, I asked what was the matter with his young Vines. His reply was, "that the wireworm was eating their roots as fast as they were formed." I professed to be sceptical as to wireworm attacking Vine roots. "I will soon convince you," said he, and, scraping away the soil with his hands, he got many young roots that were eaten through, and also wireworms, but for a time none in the act of eating a Vine root. Close to the leading stem of a Vine a whorl of young roots had been produced, and with an air of triumph he asked me to examine them for myself, and I would see he was right; and there, most certainly, I found a strong young root like a quill eaten through, about an inch from the stem of the Vine, and the wireworm all but out of sight up through it, having consumed its centre. I pulled the worm out of the roots myself. I am, however, aware that wireworms in a Vine border do no harm to Vine roots in nine cases out of ten. I do not think the roots of the Vine are its favourite food, but the roots of certain Grasses; and while these last the Vines are safe, the wireworm, as a rule, disappearing before the soil is cleared of their favourite food; but I have seen notable exceptions to this rule. At Dalquharon Castle the Hon. F. Kennedy had two sets of Vines destroyed by wireworm. This evidence, given by Mr. W. Thomson, in "The Gardener," leaves little doubt as to the conduct of wireworm in Vine borders.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Another New Melon!—I am not rejoiced to learn that our good friend, Gilbert, is engaged in adding to the already over-numerous tribe of new Melons, which are only new in name, and very often worse than specimens of the green-fleshed and other Melons in cultivation a generation ago. The flavour of a Melon generally depends on the conditions under which it is grown, warmth of the season, &c., and it is quite absurd to distinguish with a prize any fruit that happens to have a good flavour and be new, or called so; all such practices should be resented by every lover of horticulture, as they do much harm.—A. W. H.

Keeping Lady Downes Grapes from "Scalding."—Lady Downes Grape being especially liable to scald just as the berries begin to change from the sour to the saccharine state, a sure, and as I have proved, the only preventive is to give air freely night and day the moment the first berry is seen to change colour. The period at which they are the most liable to scald varies from ten to twenty days, during which time the house should be aired like an ordinary greenhouse night and day, and if the weather render it necessary, fire-heat must be applied in order to maintain a minimum temperature of 65°.—W. W. H.

Sutton's Great Britain Pear.—A seedling of the Bartlett, raised by Mr. William Sutton, Cornwallis, Nova Scotia; the tree is said to be hardy, with stout, short-jointed, dark coloured, young wood; fruit large, showy, very productive, and becoming popular as a market fruit. Fruit large, pyriform, a little obtuse; skin, greenish-yellow or pale yellow, often with a shade of red where exposed, slight nettings and patches of russet, and many russet dots; stalk long, rather stout, a little inclined, set in a small cavity; calyx open; basin shallow, a little uneven; flesh whitish, a little coarse, half melting, juicy, sweet and pleasant. Ripens about ten days later than the Bartlett (William).—Chas. Downing.

NOTES OF THE WEEK.

The Ninth Volume of "The Garden."—Bound copies of this are now ready, and may meet the wants of such readers as, during the past three months, were disappointed in getting complete sets from the beginning of the year. The volume contains twenty-six plates, title, frontispiece, &c., and a full index.

Rhexia virginica.—This rare and beautiful perennial is now in blossom in the only nursery about London where it grows freely—Messrs. Osborn's, at Fulham. It is a little Melastomaceous plant that ventures far north over the American bogs. In this country it is quite at home in the bog garden.

New Park at Birmingham.—A fifth public park—Summerfield Park—was formally opened at Birmingham on Saturday afternoon by the Mayor, Alderman Baker. It comprises a well-wooded estate of some seventeen acres in extent, surrounding an old and capacious brick mansion, and is situated in one of the poorer quarters of the town, near the gaol and the workhouse.

Lobelia Dortmanni at Killarney.—Owing to the continued drought the Killarney lakes are unusually low this summer; consequently the beautiful water Lobelia, which abounds in the shallow waters, has in many places laid aside its wonted aquatic habit of merely showing its flowers above the waters, and the appearance of broad lines and patches of it in full flower—the whole plant exposed—is, according to the "Irish Farmers' Gazette," somewhat novel and very striking.

Improved Double Balsams.—Change may seem to have done its utmost in the case of some families of plants, and perhaps the Balsam is one of those flowers in which improvement is least noticed. Yet nothing can be more striking than the double Balsams now to be seen at Messrs. F. & A. Smith's Nursery at Dulwich—pure white varieties, like a double white Camellia; delicate rose blooms, like fully opened Roses; brilliant double-scarlet blossoms again remarkably like Camellias, and so on through many colours.

Olearia Haastii.—Messrs. Barron & Sons, Elvaston Nurseries, Borrowash, have sent us flowering specimens of this comparatively little known Asteraceous shrub. The plant from which they were cut is stated to be about 2½ ft. high, and as much through, and to be one mass of bloom, so sweetly scented as to make the air quite fragrant in its neighbourhood. The leaves, which are small and Box-like, are silvery beneath and bright green above, and as the habit of the plant is compact and good, it will prove a valuable addition to our hardy evergreen shrubs.

Beautiful Petunias.—Mr. Cannell, of Swanley, has sent us a whole flower garden of Petunias of the most beautiful and varied colours. We fancied we had some knowledge of the way in which Petunias varied, but had no conception that the variation was so great until we received this batch. Perhaps the most beautiful are those of a deep crimson and violet, and the most showy those with broad bands of purple alternating with the purest white bands. Words, however, fail to convey any adequate idea of their variety and beauty. Single flowers of these Petunias nipped off with only half-an-inch of stem below the base of the tube have kept quite fresh in water for three days, proving them to be useful for cutting.

New Trees and Shrubs in Ireland.—Some of our correspondents having lately inquired as to where the beautiful Abelia triflora, recently figured in The Garden, could be obtained, Dr. Moore writes to us from Glasnevin concerning it as follows:—I have made some inquiries of nurserymen who had plants of it from us, but I cannot hear from them that they have it on sale. It is surprising how little attention is paid to really good plants by many of our nurserymen. One large plant of it has been very grand this year, and is still in flower. I have just had a hasty run through the South of Ireland, where I saw many fine things, which do not thrive equally well on the east coast. At Lismore Castle I saw many plants of Phormium tenax in full flower. The flower-stems rise about 12 ft. high, and bear panicles of large purplish blossoms, in the way of those of Anigosanthus. The Himalayan Rhododendrons are assuming their tree-like habit, and growing luxuriantly. At Lakelands, near Queenstown, County Cork, there are many fine plants, but what delighted me most was Magnolia Campbelli. The largest plant of it is from 20 ft. to 25 ft. high, quite tree-like, with a thick stem; the branches may be from 12 ft. to 13 ft. in diameter. I saw all the new plants with Mr. Gumbleton, who is doing good service by trying everything that is reputed to be in any way hardy. He is succeeding very satisfactorily, and will no doubt be able to render a good account of his stewardship soon. His beds of the new Begonias, with scarlet flowers, are very charming and effective. When well and carefully handled, they are fine things for gardens where the climate is favourable.

STRAWBERRIES—A FULL CROP IN TEN MONTHS FROM THE TIME OF PLANTING.

By Peter Henderson.

Our success in the culture of Strawberries, by the system of layering the runners in pots, has been so complete during the past season, that even at the risk of repeating some of the directions already given, I will briefly state how it is done. In July of 1875 we threw out every other row of the plants that had fruited, thus leaving the rows 4 ft. apart. This space between the rows was deeply ploughed three or four times, so as to thoroughly pulverise it. It was then leveled with a rake, and the runners from the old plants, as they began to grow freely, were led out upon it. Flower-pots, 2½ in. in diameter, were filled with the soil and plunged into it up to the brim, and the layers or buds at the ends of the runners were placed on the earth in these pots. To keep the runners in their places, we used small flat stones which were laid upon them, and these also helped to mark the places where the pots were sunk. The layers thus placed on the soil of the pots were not only kept down, but were kept moist by the stone, and rooted rapidly. In from two to four weeks from the time the operation was done the plants were well rooted in the pots, and ready to be set out. Our plants last year were set out from the pots the first week in August; not a single plant died, and all grew freely. They were set in rows 2 ft. apart, and 18 in. between the plants, and all the runners made were at once pinched off, so that by the end of the season each plant was nearly a foot in diameter, having finely developed "crowns" for next season's fruiting. The ground had been first prepared before planting by ploughing and subsoiling to the depth of 18 in., turning down at the same time 3 in. or 4 in. of well-rotted manure. Of course the ground was kept entirely clear of weeds. By the middle of December the whole bed of Strawberry plants was covered with salt meadow hay (straw, leaves, or anything similar will do as well), to the depth of 2 in. or 3 in., entirely covering up the plants and soil so that nothing was seen but the hay. By April the plants showed indications of growth, then the hay was pushed a little aside, and by May the fully developed plant showed on the clean surface of the hay. This mulching is indispensable to the best culture, as it protects the plants from the cold in winter, keeps the fruit clean, and at the same time keeps the roots cool by shading the soil from the hot sun in June. The crop began ripening June 10th, and was at its best on June 15th; the yield was perfectly enormous. Each plant averaged a quart, many of the berries being nearly an ounce in weight. Our soil is heavy clayey loam, with a stiff subsoil. I am convinced that the most profitable way to grow Strawberries, either for market or for private use, is by this system. Any handy man can place 2000 layers in pots in a day. Each layer, in ten months, makes a plant that gives a full crop of fruit. The labour is less than by any other method, because nothing more has to be done after planting but to keep the crop clear of weeds and pinch off the runners for only six weeks of the year, while with beds planted in spring, in the usual way, you have nearly six months' work on them, with no better plants in the autumn. Besides, where ground is limited, there is plenty of time by this system to throw out the plants that have fruited in June, and plant the same ground over again in August with the young plants from pots. That is really our own practice, for the space devoted to Strawberries is less than an acre. In our experiments during the past season, we found that no variety which had been left two seasons to fruit produced so large a crop as the young plants, and the berries were hardly half the size. This system of starting plants in pots, and setting them out in August, properly carried out, will never fail to give entire satisfaction in growing Strawberries.—"American Agriculturist."

The Prince of Wales' Plum.—This Plum, which is largely grown in London market gardens, has suffered much this year from a curious and peculiar decay of the branches, which is supposed to be owing to the severe weather in spring. The same affliction has been noticed of late years, but it was not so injurious as during the present year.

Darlingtonia Californica at Glasnevin.—The large specimen of Darlingtonia at Glasnevin has, says the "Irish Farmers' Gazette," this season produced pitchers fully 3 ft. high. It flowered recently, and is now swelling its seed capsules. We also learn that Cordyline Banksi, in flower in the same garden, has much increased in beauty.

The Wild Carnation from Falaise.—The Rev. H. T. Ellacombe has sent us a flower of Dianthus Caryophyllus, from a plant growing in his garden at Clyst St. George, Topsham. "I brought it," he says, "from the ruins of the château at Falaise two years ago, the place where William the Conqueror was born. It is the same Pink which grows on Rochester Castle, and which is very rarely found elsewhere. The great interest which attaches to this plant is that Rochester Castle (there may be one or two others where it has been found) was built by William and his followers, and the fact remains that on the ruins of their buildings the Falaise Pink is still growing."

THE FLOWER GARDEN.

WALLFLOWERS—ENGLISH AND FRENCH.

M. Chaté's mode of growing Wallflowers is so dissimilar to that practised in England, that one is led to imagine that it must apply exclusively to the Continent. Wallflowers, according to our notions, are more correctly classed thus:—Single Biennials, Double Biennials, and Perennial Double kinds. Of these the first and last are well known; the second, which are of Continental origin, are grown here almost, if not entirely, from imported seed. The Single Biennial section is the most popular, and our best strains of it are unequalled for richness of colouring and sweetness of perfume. The superb, dark crimson-marked kinds grown around London are too well known to need description, and can be bought in the seed trade under the various designations of Young's Blood-red, Harbinger, and Saunders' Dark, all good strains of this popular Wallflower. The Belvoir Castle Yellow is a close, compact-growing kind, which produces bright yellow flowers, and is specially suitable for spring bedding. It is easily recognised by its dwarf growth, pale green foliage, and pale flower-buds. The Golden Yellow—or, as it has been misnamed, Tom Thumb Yellow—is as robust and tall as the crimson kinds, and produces in great abundance masses of rich, orange-yellow bloom. This is a grand kind well worthy the attention of market growers. In country districts the common Single Wallflower is usually a compound of all these, and, therefore, deficient in that rich and effective colouring so peculiar to good, pure strains of the Single Wallflower.

In London market gardens, where the Wallflower is invariably well cultivated, seed is sown in the open ground early in February; the young plants are put out into their permanent quarters in May, and by Christmas, if the winter be mild, they will produce bloom, and will be so large that they would not be covered by a bushel basket. If required for spring bedding, they should still be sown early and be planted out in some spare ground about 12 in. apart. These plants will lift with good balls of earth early in winter, and in spring will produce superb masses of bloom. Some market growers sow seed late in the summer, allow the young plants to remain in the seed-bed all the winter, plant out in March, and, if the season be favourable, reap a good crop of flowers all through the next winter. The biennial double kinds are remarkable for the variety of colours which they furnish, and the stout woodiness of habit which they present; indeed, in these respects they resemble a distinct species, but probably this is due to their hybrid character. M. Chaté speaks of them as being the result of crossing the single and double Yellow kinds, but if his double Yellow be identical with that of our gardens, I think he must be mistaken, as I believe, like the double Stock, the flowers are destitute of pollen.

I cannot write with accuracy as to the hardiness of these Continental double sorts in the north, but in the neighbourhood of Southampton I have seen grand masses of flower obtained from them in April from seed sown the previous spring in a gentle heat, and planted out and treated as before mentioned for the single-bedding kinds. Probably from lack of sweetness these double and semi-double forms have not become favourites with the British public, who seem greatly to prefer their old single varieties. The double perennial kinds familiar to us are the Yellow, dark Crimson, Red, and dwarf Yellow. The yellow is most common, and a beautiful clear-coloured kind it is, and a great favourite it is with cottagers, who propagate it by putting in slips of it in their peculiar and usually successful fashion about the time the plants are in flower. It can be propagated freely by means of slips put in under hand-lights in sharp, sandy soil, and will produce plants capable of flowering the next spring. The other kinds are amenable to the same mode of propagation, the most common of these being the Red, an intermediate form that resembles the tall Yellow, but which has a shade of colour that is neither striking nor pleasing. The old dark Crimson is now apparently almost extinct; in colour the flowers are almost black and very striking. I met with it occasionally twenty-five years ago, but since then I have not seen it. The dwarf Yellow has flowers of a dull, almost buff tint, but it is fairly well adapted for pot culture. A. D.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Our most beautiful and popular Gentians are associated with spring, but now, in the time of Yuccas, and Lilies, and showy flower-beds, we have also the beautiful blue of the Gentians represented by the Marsh Gentian (Gentiana Pneumonanthe), the tall, Asclepias-like Gentian and G. septemfida. It is, we might add, refreshing to see the bright blue of these flowers quite vivid when many other flowers are rusty from the recent drought. One of the most brilliant and graceful of perennials is the Zauschneria californica, now coming into flower. It detests some cold and stiff soils, and therefore is not common. Few plants better deserve a permanent place in our flower borders. The Sea Bindweed (Convolvulus Soldanella) is charming just now, especially when placed on a rock or root garden or raised border, although it will thrive perfectly well on the level ground and in any soil. The Blue Rock Bindweed (Convolvulus mauritanicus), mentioned before, is still fresh and lovely, and is, perhaps, seen to greatest advantage on raised borders. In the smallest collection this plant, which, though grown in greenhouses, is quite hardy, should have a place. Another modest-looking trailing plant is the Creeping Vervain (Zapania nodiflora), now beginning to open its numerous delicate flowers, densely covering its prostrate stems which run all over the ground. The beautiful and well-known Campanula turbinata is a stately object. It reminds us of the charming effect in one of Miss Marian Chase's pictures, in one of the water-colour exhibitions this year, showing the interior of a church in Brittany beautifully embellished with stately pyramids of this plant grown in pots. The distinct-looking and, when grown on light soil, the stately Acanthuses are beginning to bloom on the London clay, though they never assume the graceful and stately port which they do on open and deep soils. The hybrid varieties of Potentilla have generally suffered much from the heat, but the dwarf, Double Creeping Potentilla (P. reptans fl.-pl.) is now fresh and pretty. Among many dwarf Alpine flowers Mœhringia muscosa is noticeable. Two plants at present in flower are remarkable for their graceful habit and foliage, Astilbe rivularis, a hardy Spiræa-like perennial from Nepaul, growing about 4 ft. high, and the still taller Hemp-like Datisca cannabina, from Crete. Among herbaceous plants the old Soapwort (Saponaria officinalis) is conspicuous: and among aquatics the white flowers of the creeping Bog Arum (Calla palustris) are welcome when so many of our water plants have gone out of flower. Among annuals, which we may group with hardy flowers, the Zinnias, the Common Tobacco, and French Marigolds are conspicuous. Lilies are still beautiful, notably L. canadense and L. superbum. Torrey's variety of the Bearded Pentstemon is also very fine. Mr. Ware sends us a beautiful specimen of a large Œnothera, called montana. A pretty blue perennial is Dracocephalum altaiense, which is free, hardy, and an abundant bloomer. The old Scarlet Lychnis is very fine now, and is worth growing if only for the sake of the cut flowers. We notice the Double White of this, an uncommon plant at Ware's. Among the Statices S. incana is one of the best. There is a host of Alliums in flower, but few of them are worth cultivation, on account of their unpleasant odour. There are also many fine Campanulas, one of the best being Campanula Hosti alba. The handsomest of the Compositæ now in flower is Gaillardia grandiflora. Two of the most welcome flowers of the season are Cyclamen europæum and Parnassia palustris (Grass of Parnassus).

Fremontia californica.—This has been blooming here on a south wall since the middle of May. Its flowers are very curiously placed on the young shoots of the current year at the nodes just opposite the leaf-stalk and wood-bud, on the reverse side of the shoot, exactly where the tendril of a Vine would be produced; they are solitary, deep orange-coloured, something like the flowers of an Abutilon, with the petals turned back, and quite as large as a crown piece; there is no calyx to the flower, and the seeds are in a round capsule, which is not seen until the flower drops. I hope to find the seed ripen this season. The plant produces a succession of flowers as it advances in growth; they are in all stages, from the size of a pin's head to that of the full open flower. This plant will at least be hardy on the south coast.—W. D. Wimborne.

Pyramidal Hairbell (Campanula pyramidalis).

Worm-grass (Spigelia marylandica).

Prickly-leaved Bear's-breech (Acanthus spinosus).

Rivulet Astilbe (A. rivularis).

Vermilion Zauschneria (Z. californica.)

Tall Blue Gentian (Gentiana asclepiadea).

Panicled Phlox (P. paniculata).

Rosy Sea Lavender (Statice eximia).

White Gaura (G. Lindheimeri).

Double-flowered Sneezewort (Achillea Ptarmica fl.-pl.).

Double-flowered Zinnia (Z. elegans).

Hairy Epilobium (E. hirsutum).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

SCRAMBLING ROSES.

We have a pretty extensive collection of Roses, but one of the most attractive specimens on the place is an old double white Ayrshire Rose growing in a group of common Laurel in the shrubberies. We cannot tell how old the plant may be, but it has probably been in its present situation for thirty years, struggling the best way it could to keep its place among the tall-growing Laurels, sometimes sending out a shoot of white flowers on this side and sometimes on that side of the clump of bushes, and sometimes scrambling up to the tops of the tallest limbs and draping them with its blossoms throughout June and July. Nearly three years ago we had the Laurels headed down to within 6 ft. of the ground, leaving the straggling limbs of the Rose which were found amongst them, and since then it has grown and thriven amazingly, and now fairly threatens to gain the mastery. We had the curiosity to measure the plant the other day, and found it rather over 70 ft. in circumference. Within this space the plant forms an irregular undulating mound, nearly in all parts so densely covered with Roses that not so much as a hand's breadth is left vacant anywhere, and the Laurel branches are quite hidden and, in fact, are now dying, smothered by the Rose. A finer example of luxuriant development we never saw. The plant has been a perfect sheet of bloom for a month or more, and there are thousands of buds yet to expand, and hundreds of bunches of buds have been cut just at the opening stage—when they are neater and whiter than a Gardenia—to send away. The tree has never received the least attention or assistance, with the exception of the removal of the Laurel tops before mentioned, to let the light into it. It is growing in a tolerably deep and strong, dry loam, and this, together with head room, seems to be all it requires. We record this example simply to show of what the Rose is capable without much cultural assistance. No doubt, in order to produce fine individual blooms certain restricted culture is necessary; but almost any variety of Rose will make a good-sized natural bush of itself, and as for the climbing or pillar Roses, the less they are touched the better. Of course, we are not alluding to the Rosery proper, but of Roses in their more natural aspect, as when planted to hide fences, cover rockeries, or as striking objects on lawns. Some time ago there was published as a novelty (but which was nothing of the kind) an illustration of a kind of triangular wire cage on which to train Roses on lawns, the Roses being planted inside and clipped or cut to the shape of the cage. Such contrivances have been common ever since we can remember, and they are of various shapes and sizes; but at the best they have a very artificial appearance, and never make a Rose tree look so well as when it is allowed to grow in its own natural way.

When climbing Roses are planted as solitary objects on a lawn they, of course, want something to support them at first; and for this purpose nothing is better or more convenient than four or five thin flat iron rods bent over each other at right angles, with their ends in the ground so as to form a circular mound about 4 ft. high and 6 ft. through. The Rose tree is planted under the hoops, in the centre of the circle, and as it grows a limb is trained each way to form the foundation of the future plant, and after the first or second year it is left entirely to itself. The supports are soon covered, and a large and natural-looking mound of Roses is the result. We have seen specimens of this kind twenty years old, in which the wood had accumulated about 2 ft. or more deep all over the trellis, and yet nowhere was there any dead wood to be seen, owing to the plants throwing out fresh limbs annually, which covered the old ones. The plants, in fact, grow exactly in the same manner as the wild Brier, which, as everybody knows, keeps sending up long shoots from the centre of the plant, increasing its size every year. Those who desire very large mounds may have them just as easily as small ones, and in about as little time, by increasing the size of the iron framework and planting the Roses—as many as they choose—round the sides. This would leave the space inside vacant, and, by keeping the internal surface clipped with a pair of shears, they would have a veritable bower of Roses. This is one way of utilising climbing Roses, and it is a plan by which they can be got to show themselves off to advantage, which they cannot do so well on rockeries and fences, &c., where they are usually trimmed annually to keep them within bounds, and the trimming impairs their appearance. Except against walls, and in similar situations, there is no occasion to prune climbing Roses. Left to themselves, they make by far the grandest display, and to insure this it is only necessary to provide them with a good, deep, strong soil at the beginning, and to let them have a fair amount of light on all sides. Whether planting be carried out with the object above described, or for the purpose of covering naked tree stumps or limbs, or for draping any unsightly object whatever, liberal treatment in the first instance is the main thing. A good soil makes all the difference in time and in the permanent vigour of the tree, and were we desirous of having a great Rose tree (whether it be a common Ayrshire or a Gloire de Dijon, that we expected to produce thousands of blooms in a few years), we should, if the soil were not naturally strong and deep, provide a well-drained pit and fill it with two or three good cartloads of sound loam and manure: thus treated, the result is certain, provided an unrestricted growth be permitted. What has been accomplished with the Vine in the way of unlimited extension can also be done with the Rose. Close pruning was formerly thought to be absolutely necessary for the production of good fruit and well-furnished trees, but that notion has been practically exploded, and it is now found that the less the knife is used and the more the tree is allowed to grow, within certain limits, the stronger and the more fruitful it is. But how stands the case with the Rose? Quite a different doctrine is taught, and yet the object in view is the same; we cannot see how a Rose tree differs from a Vine or other fruit tree as regards the production of flowers. One of the best writers on Rose culture recommends tolerably close annual pruning, regulating operations by the vigour of the plants, only shortening strong wood less and weak wood more. But why cut at all so much, unless with the object of trimming? We would go further even and ask, Is it proved that the usual cutting back process is necessary to the production of what are called exhibition blooms? Would not the extension system of training and a high-root culture give equally good results, and large handsome bushes at the same time, instead of mere stumps, such as close-pruned Roses usually remain to the end of their existence? Allowances must, of course, be made for different varieties, but these questions are worth considering. One is often struck with those large specimens of hybrid perpetuals and other dwarf types, to be seen in cottage gardens and elsewhere, which, as a rule, receive no pruning whatever, and not very high culture, and yet they produce sheets of bloom annually, not first-class flowers, it is true, but wonderfully good under the circumstances, and sufficiently so to make the high-class cultivator pause and ask himself what could not be accomplished in the same way if he were to try, and whether or not he is really in the right track after all in following a practice which in fruit culture would be termed the "mutilation process."

Let us, in conclusion, just refer to a few of the most eligible of the climbing Roses. Among the most common and hardiest are the Ayrshire Roses. These are all double or semi-double, and the best of them are white or of a pinkish colour. There are hardly a dozen varieties altogether, and most of them are worth growing for the sake of variety. About equally hardy and useful for the same purposes is the Evergreen Rose, so called on account of the length of time it retains its leaves in winter. There are several good varieties, and they are vigorous and rapid growers, and need little or no attention except thinning when they are trained to pillars or walls. In rustic situations they need not be meddled with at all. To these may be added the Boursault varieties, a few of the Bourbon kinds, of which Souvenir de la Malmaison is the best example, and Gloire de Dijon and Maréchal Niel among the Tea-scented class. The last two are worthy of all the attention that can be bestowed upon them. Gloire de Dijon comes in early and goes out late, the second growth often producing flowers in abundance late in the season, and in the south the Maréchal Niel does well either on a wall or as a rambler in the open ground. As far north as the Tweed it occasionally grows and flowers freely on a roof or wall in a

favourable exposure. Both are hardier than some people imagine, and as with most Roses unpruned plants stand severe winters best. Both, too, are great ramblers, and where the situation suits them there is nothing to prevent any one from having single plants of either quite as large as the one we have given an account of at the beginning of these remarks. —"Field."

Blue-flowered Pentstemon (P. heterophyllus).—Mr. Niven, in his recent notice of the Pentstemons, has, I think, scarcely done justice to this very desirable species. Having had the pleasure of re-introducing it to British gardens three or four years ago, I have had good opportunities of observing its character and behaviour in our climate, and I am inclined to regard it as one of the best of the blue-flowered species—for blue it certainly is so far as my experience goes, though in a large bed an occasional specimen may be met with in which the colour verges upon reddish-purple. The fine azure-blue tint of the corolla closely resembles that of the so-called P. Jaffrayanus. P. heterophyllus is, however, dwarfer and more compact in habit, and the colour resists the action of sun and rain better than that of Jaffray's (or should it not be Jeffrey's?) Pentstemon. It is hardier than many species, but often succumbs to severe winters. —W. Thompson, *Ipswich.*

Wild Garden and Fernery.—I have read with both interest and pleasure "Oxon's" account of the formation of his wild garden in Vol. VIII., p. 123, and I am able to indorse from experience what pleasure can be derived from a wild garden and Fernery planned and planted, and to a great extent tended by oneself, with occasional help from an old man, who, although he may be careless about the usefulness of fallen branches for the cottage fire—as he lives in a peat district—yet takes great pride in the success attending his own and his employer's labours. Rhododendrons, Weigelas, Camellias, Magnolias, Arbutuses, Deutzias, Clethras, and a Tulip tree may be enumerated, amongst others, with which a good start has been made. The soil is partly loam and partly clay, but in spring the country (South Carnarvonshire) generally suffers from drought, and the clay, helping to retain moisture longer, is beneficial rather than otherwise to the Fernery and its surroundings. The climate in winter is sufficiently genial to allow the Lycopodium denticulatum, which covers a bank, to flourish without protection, although last winter made more brown patches in it than the preceding one. If "Oxon" would kindly give me a few hints as to what plants, by being mixed amongst the shrubs, would by their blossoms or leaves enhance the beauty of my wild garden, and that would show to the best advantage late in summer or autumn, I should be greatly indebted. In the spring months little can be done, as I am from home.—M. L. W.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Foxgloves and Ferns.—There is no mixture superior to these for effect. The long spikes of brilliant colour resting on verdant Fern fronds, with now and then a fine leaf towering up among the coloured spikes, are inimitable. The two also agree well together, if neither be planted so thickly as to predominate over and smother the other.—D. T. F.

Sweet Peas for furnishing cut Bloom.—Blooms of Sweet Peas are universal favourites, and one great advantage in growing Sweet Peas for this purpose is that the oftener the expanded blooms are gathered the longer the plants continue to produce them. By sowing early in November we have had them in full flower in May, and with attention to mulching, watering, and gathering every expanded flower as it is ready, we have had plenty of blossoms the whole season.—James Groom, *Henham.*

Limnocharis Humboldti.—Although this is generally treated as a stove aquatic, it appears to be hardy enough to thrive in a much cooler temperature. There is a good plant of it growing freely in an open tank in Mr. Parker's nursery at Tooting. It also grows and flowers freely in an open-air pond in Mr. Beaufoy's garden at South Lambeth. It should, however, be added that the water is kept somewhat warm by means of waste steam.—S.

Two useful Annuals.—A gay effect has been produced in the herbaceous borders at Blenheim by alternate tufts of the richly-coloured Convolvulus minor and the Crimson Flax (Linum grandiflorum). These were sown in the borders early in spring, and thinned out to a few of the strongest plants. Hardy annuals such as these when thus treated produce most beautiful effects not excelled by Pelargoniums and other tender plants that require wintering under glass.—A.

Achillea Eupatorium.—This is truly a grand border plant which, when well established in the form of a large clump, is strikingly effective. It grows to a height of 4 ft.; its trusses of golden flowers, about 6 in. in diameter, resemble those of a huge yellow Ageratum. Any one interested in plants suitable for a wild garden, would find this well worthy of attention.—D.

Fuchsia Riccartoni.—There is a perfect hedge of this fine old hardy Fuchsia running across the large kitchen garden at Blenheim. The summer's growth is annually cut away, and the roots are protected by a dressing of leaf-soil or spent tan. When I saw the plants recently, they were about 4 ft. in height and as much through, and the wood was covered with blossom. This would materially increase during the autumn and would continue until cut down by frost.—A.

ON THE MIGRATION OF VEGETABLE LIFE.

We have often spoken of acclimatization as practised directly and intentionally, with the object of enriching a country with the various species that it is desirable to see naturalized there. But side by side with this voluntary interference of man there are constantly at work, as means of propagation, all the natural agents of transport, such as air, water, glaciers, and animals. Man himself enters into the same category, because indirectly, and without giving a thought to it, he is taking part in the same results. I wish to pass in review on this occasion some few examples of this unconscious acclimatization.

As M. Marion remarks in his book "The Wonders of Vegetation":—"Air certainly plays the most important part in the dissemination of plants: a vast number of light seeds seem to have been furnished with tufts or membranous wings, only for the purpose of rendering them more likely to be carried away by its movements. To this end the light fruit of many plants is crowned by a tuft of expanded fibrils, forming an actual parachute which rises at the slightest puff of wind. Thus, separated from the mother plant, the seed can make very long journeys by the aid of its aerial boat. The mildest breeze springing up in a valley suffices to plant it on the heights of the mountains; while if a tempest should arise, the fragile parachute commits itself to the storm, crosses the sea, and effects its descent on some unknown shore." A very curious instance of such transportation to great distances by atmospheric currents has been quoted by M. Auguste de Saint-Hilaire, in his "Flore Française." Towards the middle of the seventeenth century a bird's skin was sent over from Canada to England, wrapped up in the leaves of some "Composite" plant, which were thrown aside when the packing case was opened. The seeds of this plant, which are surmounted by plumulæ, were scattered round about by the wind, and step by step they spread, not only in England, but also in France, after crossing the Straits of Dover. In 1800, the Abbé Delarbre wrote that he had never found but one specimen in all Auvergne; in 1805, Messrs Saint-Hilaire and De Salvert met with it all over the Limagne; and, at the present moment, according to M. Schnetzler, of Lausanne, this Erigeron canadense, the plant in question, flourishes in France, Switzerland, and the whole of Europe. It is an "ill weed" that grows apace on slopes of railways, and on uncultivated sandy soils. In an analogous manner our prickly Cardoon, carried, one knows not how, into South America, has invaded the immense Pampas of La Plata. M. Marion, from whom I borrow the facts, adds, that the interchange of noxious herbs between the old and new worlds does not stop here. If our Couch Grass and Nettles infest the gardens of the United States, La Plata in revenge has sent us those Burdocks and Amaranths that are the plague of our vineyards in the south of Europe. While the seeds of Thistles, Salsafy, Cornflower, Eupatorium, and Valerians become the sport of the winds, thanks to the tufts by which they are surrounded, the fruits of the Pine, Fir, Elm, and Maple are provided with one or two wings that carry them far and wide. Those of the Lime are placed at the end of a peduncle, which is itself furnished along its whole length with a slender leaf, called its "bract," by means of which they whirl round and round in the air till they fall to the ground in the fields or in the streets. In the case of the shrubs and trees of which we have just been speaking, the seeds do not separate from the fruit, and this latter is directly provided with these means of dissemination. On the other hand, M. Boquillon tells us, that in the case of vegetables bearing fruits that open, such as the Bignonia, the Tecoma, the Catalpa, the Willow, the Poplar, and the Cotton tree, the seeds separate themselves from the fruits, and it is they that are provided with appendages for flight. Willows and Poplars are so common everywhere, that it is easy for anyone to investigate this for himself. People walking on the wharfs at Paris in summer time get their coats covered with little pieces of white down, when the wind sets in the right direction. With a little care a small brown body may be discovered carefully enveloped in the down; this is a seed grain from the Poplar trees situated near the Porte Marie, or from those in the neighbourhood of the Tuileries.

Running waters supplement the wind in this dispersion of seeds. Sometimes seeds only, sometimes fruits, are thus transported. The fruits of Fennel are exactly like miniature boats; these, carried by the sea, reach the coast of Madeira in such enormous quantities, that one of the bays of the island has been named Funchal or Fennel Bay. Hazel Nuts again, and Walnuts, have a shape suggestive of a barrel; they float very readily, and travellers have seen huge quantities of them that have been carried over by currents to Canada and to the United States. For a long time the source of those Coco-nuts that are drifted about by the Indian Ocean and finally stranded on the coast of Malabar remained a mystery. These gigantic fruits, some of them more than half a yard in diameter, and weighing from twenty to twenty-five kilogrammes, are not the produce of any neighbouring country, and the Hindoos called them "Sea-cocos,"

supposing that they were supplied by some unknown marine plant. It has since been discovered that they are the produce of the Lodoicea, a magnificent Palm, growing on the Seychelles Islands, which lie on the eastern coast of Africa, more than 400 leagues from the nearest point of Indian territory. M. Schnetzler mentions that the currents of the Pacific Ocean carry out Coco-nuts and other fruits from the American Continent to enormous distances in a similar manner. These find a resting-place on the coral ridges which are raised up from the bottom of the sea by the ceaseless labour of polyps; here they germinate and soon cover with brilliant verdure that which was but yesterday a rock almost invisible to navigators. Hooker recognised at the Gallapagos Islands more than 140 species of plants that belong to the Isthmus of Panama. In this way the enormous pods of a climbing Mimosa, carried across the Atlantic by the warm blue waters of the Gulf Stream, are driven on to the Norwegian coast, where, of course, the seeds they contain fail to germinate, owing to the insufficient temperature they encounter in the country of their exile. Floods, torrents, and rivers, too, bring down in their course seeds and fruits, sometimes whole plants. M. Schnetzler points out how mountain plants in Switzerland come down stage by stage from their native heights, till at last several beautiful species of Sassafras and Ranunculus have established themselves at the foot of the Alps.

At the end of the last century the banks of the river Sèvre, near its confluence with the Loire, were remarkable for the large quantities of Lindernia—a Scrophulariaceous plant—that grew upon them. Only four or five years ago the botanists of Nantes discovered to their surprise that this plant had been completely driven from its domicile by an invasion of the Ilysanth, a species of the same Natural Order, but of American origin. In 1869, M. Ledantec found the muddy banks of the Mayenne, above Angers, covered with an enormous quantity of Ilysanth, in the midst of which a few scraggy choked-up plants of Lindernia appeared as the last representatives of the native population, driven out by their exotic relatives, whose presence has since been noticed on the banks of the Loire itself.

According to an observation by M. Boreau, published in the "Memoires de la Société Académique de Maine-et-Loire," the rapid distribution of certain foreign plants through the medium of water is an established and incontestable fact. The Panicum Digitaria, an American Grass, first observed near Bordeaux in 1824, has spread widely in the neighbouring departments, and has got as far south as Toulouse. Another Grass from southern climes, the Stenotaphrum americanum, is spreading its powerful roots in the sands at the mouth of the Adour. The Elodea (Anacharis) canadensis, has invaded the lakes and rivers of England, Scotland, Belgium, Holland, and Germany. In Belgium and elsewhere drains have been rendered useless, and canals have been completely obstructed by these plants; and in many large sheets of water it suffers no vegetable life but its own to exist. Since 1871 this formidable stranger has gained several points in France; it has been found on the outskirts of Brest; M. Lamy came across it in a pond in the Haute-Vienne district; and it swarms in the waters of the Paris parks. Another plant of the same family, the Stratiotes aloides, introduced in 1828 in the neighbourhood of Mans, has followed the course of the river Sarthe; it abounds in the lakes near Morannes and Châteauneuf, and infests St. Nicholas Pond, at Angers. Geologists have drawn attention to a mode of transport which is of much importance in northern latitudes—viz., that effected by floating ice. Arctic explorers have often met with icebergs loaded with an enormous mass of *débris*, such as is often found on the glaciers of the Alps. Such an iceberg running aground on a distant shore deposits there the seeds which it carried, and these take root in their new home. It is the action of floating ice, again, that explains the presence of the rocks called erratic, which are scattered in such numbers about the soil in Northern Europe. At a time long anterior to the appearance of man on our planet, when a vast ocean, stretching from the Baltic to the Polar Sea, separated the island formed by the mountains of Norway from the rest of Europe, huge blocks of ice carried away granite rocks from these mountains to the coasts of Spitzbergen, Great Britain, and Friesland: these are found in the plains of Prussia, Poland, and Russia, as far as the sides of the Carpathian and Ural Mountains. Botanists have discovered that many of these Scandinavian rocks, thus left there by the sea, are still covered with Lichens, Moss, and other plants belonging to the Norwegian series. Geologists have given the name of glacial epoch to the time when the action of ice was so actively at work. Under the influence of certain meteorological conditions, glaciers descended from the heights of the mountains. Alpine plants growing in their neighbourhood, followed them in their course, and when the ice had disappeared, such few of them as were sufficiently hardy to adapt themselves to their new climate became perpetuated among us. In this way, says M. Schnetzler, we may regard as survivors of the glacial epoch those colonies of Sassafras, Primrose, Toad-flax, Soldanella, and Rhododendrons that are spread abroad over the Swiss table-land and the plains of Northern Germany. Animals are not less active contributors to vegetable propagation. Sometimes a yellow-hammer or a thrush lets fall the Cherry he carries in his beak; sometimes a misselthrush that has picked the fruit of the Mistletoe carries it off to a tree, where a sticky berry adheres to a branch, and so allows its embryo to develop. Again, the coloured berries of the Sorb, the Elder, Ivy, and Juniper tempt the appetite of thrushes and redwings, which carry off their booty and leave it, more or less deprived of its pulpy envelope, on the walls of old buildings. This is why we so commonly see ruins crowned with clumps of Elder, Ivy, and Juniper. Crows, jays, and magpies, again, bury fruit and seeds in the ground, and squirrels, dormice, rats, field-mice, and hedgehogs hide away as provender Nuts and Acorns, and grains of Wheat. Very often, says M. Bocquillon, animals do not thus sow the seed directly; they swallow the fruit as food, and the seeds contained in the fruit, being protected by a skin or a shell, undergo no alteration in the digestive canal; when discharged from it, they fall to the ground and grow. In Java there is a sort of civet cat that is a great eater of the fruit of Coffee plants; this little animal swallows them greedily, contents himself with the pulpy portion, and allows the two seeds which it contains to escape. According to Junghuhn, the Coffee berries thus discharged under conditions most favourable to germination, are eagerly sought after by the inhabitants of Java, and are carefully collected from all accessible places. It appears that in Ceylon there is a kind of thrush that feeds on the fruit of the Cinnamon tree, and distributes the seed in all directions. According to Sebastiani, 261 species of plants are found on the site of the Colosseum at Rome, whose presence there is due to the transport of seeds by birds. M. Marion relates that when the Dutch destroyed the Nutmeg trees on several islands of the Malay Archipelago, with a view of concentrating its cultivation on one of them alone, the pigeons that abound there completely upset their calculations by re-introducing the plant, of which they are extremely fond, wherever it had been extirpated.

Man himself, as we have said, often propagates plants without intending it. The great army of cereals which accompanied our forefathers from Central and Western Asia brought with it a host of disreputable "camp-followers," which we find in our Corn-fields at the present day, as weeds. Among the Asiatic plants thus "smuggled," as it were, into Europe, are some of the prettiest of our common field-flowers such as Corn-flowers, wild Poppies, Dauphinelle, and Toad-flax. Other plants followed in the train of the Mongolian hordes that advanced as far as Central Europe in the Middle Ages: we find varieties of vegetation belonging to the steppes of Mongolia in Hungary, Moravia, Bohemia, and Carniola. The Bohemians, originally from Hindustan, brought us the Datura Stramonium, a poisonous plant belonging to the Solanaceous Order. The Cossacks transported from the steppes of Southern Europe several species which were unknown in England and France previous to the war of 1814 and 1815. Through this source a Cruciferous plant, Bunias orientalis, has reached as far as the Bois de Boulogne. When the North American Indian finds the great Plantain on his path, he calls it "the white man's footprint," and it was in fact the white man who took it to that continent. A leguminous plant of the species Vicia, which grows to this day in Greenland, furnishes us, by its presence, with a proof of the colonization of the now ice-bound country by the Norwegians. I will quote one more example of seeds travelling with merchandize sent out from foreign countries. Near Montpellier is a little creek called Port Juvenal. There, in the fifteenth century, the galliots of Jacques Cœur discharged their cargoes of spices and precious textures from the East. At the present day, the cargoes of wool coming from the ports of Syria, Bessarabia, Algeria, and Buenos Ayres are washed and dried there. These wools are laden with seeds which have clung to the sheep's fleeces. The seeds have germinated, and produced a little colony of more than 400 different species of plants, which M. Godron has described in his "Flora Juvenalis." Again, in 1855, at Louviers, M. Bocquillon collected a quantity of leguminous fruits, whose prickles had attached them to fleeces sent over from Australia. He extracted the seeds from them, put them in the ground, and has succeeded in raising a considerable number of plants. You have seen, gentlemen, by the various facts that I have quoted, that Nature has not assigned to every plant an immutable dwelling place; they are not always absolutely confined to the country which gave them birth. Powerful agents often transport them, in the face of a thousand obstacles, to other climates at prodigious distances from their original home. Why, then, may not man have good hope of successful results, when he endeavours systematically to encourage the migration of such vegetable species as are useful to him?

[The above paper by M. Drouyn de Lhuys, was read at the last annual meeting of the French Society of Acclimatization by the President.]

THE INDOOR GARDEN.

ONCIDIUM CURTUM.

This is one of the handsomest Oncidiums belonging to the O. crispum group, in which O. crispum flavum, O. Forbesi, O. Marshallianum, O. pectorale, and the plant now under notice,

Oncidium curtum.

are the most attractive kinds. One of the most distinct of all, however, is O. curtum. It has a rather dense, pyramidal inflorescence, and the individual flowers of which it consists

Bloom of O. curtum (natural size).

are scarcely more than half the size of those of O. crispum, but in colour they are very bright and distinct; the sepals and petals are of a clear, soft yellow, barred and blotched with cinnamon-brown, the lip being of the brightest golden-yellow colour spotted around the lower margin with brown, and having a dark purple, corrugated crest on the disc surrounded by a few more brown spots. In habit of growth the plant comes near O. crispum, but the shape and colour of the flowers remind one of O. sarcodes. The extremely short column and downy anther-case may distinguish this plant from its allies. Although by no means new it is at present very rare. Mr. W. Bull has flowered it once or twice, and our engravings were made from a specimen which flowered in his collection in June last. It was figured and described by Lindley in the "Botanical Register," t. 68, as long ago as 1847. When well grown it is a most attractive plant, and its scarcity alone prevents it from becoming popular in all good collections.

B.

Bush Allamandas.—As the Allamandas staged at public exhibitions invariably have their shoots tied closely to a wire trellis fixed in a pot, and in consequence present a somewhat formal appearance, it is worthy of note that at a recent exhibition at Wimbledon two bush specimens were staged. One of these, according to the "Gardeners' Magazine," was contributed by Messrs. Jackson, of Kingston, and the other by Mr. Moorman. Both measured some 3 ft. in diameter, and, being well flowered, presented a remarkably satisfactory appearance, much more so than those trained to balloon, or indeed any other form of wire trellis. When trained in the bush form the flowers appear to greater advantage, the plant has a more natural appearance, and this style of training does not entail much, if any, additional labour. The wood of the previous year is kept well down, and the young shoots also are trained horizontally to stakes fixed in the pot during the early part of the season, and after passing a certain stage they are trained at proper intervals in an upright direction. Allamanda Hendersoni, the form represented at Wimbledon, appears to be the best of the really first class exhibition kinds for this style of training.

Reidia glaucescens.—This elegant Euphorbiaceous plant, a native of Java, when well grown and healthy, is exceedingly ornamental. It has a regularly bushy habit, consisting of slender branches growing at right angles with the main stem, and furnished with glaucous-green leaves or phyllodia, fringed with a profusion of neat, light pink blossoms, suspended on very slender, long, drooping stalks, giving to the plant a most graceful aspect. When struck from a cutting and grown on without being stopped it forms a most beautiful pyramid, the main stem growing naturally as straight as an arrow, and regularly furnished from top to bottom with slender branchlets and lovely flowers. When grown thus the first season, and cut down close to the surface of the pot the following spring, it breaks away with as many main stems as there are eyes on the stool, and grows into a denser, but still a most elegant bush. It is very easily propagated by means of cuttings about 6 in. long, and it thrives well in a compost consisting of equal parts of fibry peat and loam with a little sand. It requires a stove temperature and a moist atmosphere, with shade from bright sunshine. Supposing a plant grown into a pyramid with a main stem the first season, the best way to get a large and better bush with a corresponding number of laterals and flowers is to cut down a year-old plant in March; let it break into fresh growth, and then partially shake it out and re-pot in fresh soil, plunging it in bottom-heat to assist it in making a fresh start. When well rooted, shift on into an 8-in. or 10-in. pot, according to the size of the plant desired. Do not stop the main stems, but let them grow on without either pinching or training, and they will furnish graceful foliage and still more graceful pendent flowers. Wherever there is a stove, there should be at least one or two plants of Reidia glaucescens. — "The Gardener."

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Coleus Crown Jewel.—Looking through the plant-houses at Blenheim recently I was much struck with the beauty of this Coleus, and as there were a score at least of other kinds growing with it, amongst which it stood pre-eminent for richness of colouring and compact habit of growth, I have thought it worth a special note. The leaf-ground is a deep, rich claret-maroon, margined with a clearly-defined edge of orange-yellow.—A.

Lobelia subunda.—This little gem, a fine-foliaged plant, I can recommend to all lovers of beautiful-leaved and dwarf-habited plants. I sowed the seed of it in April, in saucers, which are now completely covered with lovely-veined velvety foliage quite rivalling that of some of the much-prized Anæctochili. It has been kept in the greenhouse, which seems to me its proper place.—J. M., *Hawkchurch, Axminster, Devon.*

The Azorean Forget-me-not.—This is grown at Blenheim as a summer pot plant in the houses, and it furnishes a deep rich shade of blue that is not too abundant at this time of the year. It is very effective when used in bouquets, indeed, for any purpose seed of it should be sown in a gentle heat in March.—A.

TREES AND SHRUBS.

THE HARDY VARIETIES OF THE GUM CISTUS.

By GEORGE GORDON, A.L.S.

Most of the Gum Cistuses, or Rock Roses, are more or less tender, and require protection in winter in the climate of London; the hardier sorts, however, do very well in most seasons when planted on rockwork, and grow freely in any common garden soil that is dry, but do not bear transplanting except when young, as they have but few fibrous roots. They are all bushy, low, evergreen, or sub-evergreen shrubs, which flower profusely from June to August; but the flowers, which considerably resemble a single Rose in shape and size, only last for a single day, opening in bright weather in the morning, and shedding their petals in the afternoon. The flowers are either purple or white, never yellow, and some of the purple-flowered kinds are liable to vary in the tints when obtained from seed, and many alter much in their habit of growth, colour and size of the flowers, and in the form of the leaves, when raised from seed; these are afterwards perpetuated by cuttings under different names.

The Purple-flowered Section.

1. The Hairy Gum Cistus (Cistus villosus).—This fine, hardy kind forms a dense, compact bush, 3 ft. high, which flowers profusely from June to August, and is a native of Italy, Spain, and Barbary. It is well known in collections under the name of C. salviæfolius (which is a white-flowered kind), and the C. rotundifolius is only a variety of it, with the leaves more rounded in outline and of greenish colour, as also the C. pilosus. The leaves are roundish ovate, tomentose, and wrinkled on both surfaces; the foot-stalks are short-furrowed and joined at the base; the flowers are large and mostly of a reddish-purple, but they vary in colour from pale lilac to deep purple, and are borne on one-flowered stalks, from one to three together, with large, spreading petals, imbricated at the base, and with the divisions of the calyx hairy and the capsules large.

2. The Hoary-leaved Gum Cistus (Cistus incanus).—This variety grows in the form of a hoary, grey bush, 3 ft. high, which flowers abundantly from June to August, and is a native of Spain and France; C. canescens and C. cymosus are also varieties; it also goes by the name of C. albidus. It is one of the hardiest, and its greyish aspect renders it very distinct. The leaves are oblong-linear, bluntish, hoary, waved on the edges, three-nerved, wrinkled, tomentose, without foot-stalks, and somewhat joined at the base, with the upper ones narrowest; the flowers are reddish-purple, on terminal, one, three, or more flowered foot-stalks; the sepals are ovate-acute, and clothed with starry pubescence; the petals are obovate, distinct, of a darkish purple, with a yellow spot at the base of each, and notched at the top.

3. The Purple-flowered Gum Cistus (Cistus purpureus).—This is a free-growing, much-branched bush, about 3 ft. high, the branches of which are rather erect and clothed with brownish pubescence; the flowers are large, of a bright reddish-purple, with a yellow spot at the base, above which is a large, dark, velvety blotch, surrounded with red, and slightly branched. It is a native of the Levant, and flowers in June and July; it is very hardy, and pretty on account of the bright reddish colour of the flower with a dark velvety spot on each of the petals. The leaves are oblong-lanceolate, more or less wrinkled, and either obtuse or acute at the apex, netted and nerved, with the edges wavy. The flower-stalks are short, hairy, connected, and sheathing the stem; the flowers are terminal, from one to six together on short stalks; bracts without stalks, leaf-like, pubescent, broad, concave at the base, where they are connected and terminate in acute points; flower-stalks one, two, or three together, short, and with the calyx hairy; petals five or six, obovate or wedge-shaped, imbricated, more or less crumpled, and of a beautiful, bright, reddish-purple, with a dark crimson spot near the base.

4. The Small-flowered Gum Cistus (Cistus parviflorus).—This is a native of Crete, grows about 3 ft. high, and flowers profusely in June and July. The leaves are rather small, narrowly ovate, acute-pointed, somewhat tomentose beneath, much wrinkled, drawn down to and somewhat joined at the base, and greenish in colour. The flowers are small, purplish, terminal on the lateral spray, on long foot-stalks, with two or three flowers on each near the top, and which stand well above the leaves; the petals are distinct, and the calyx and capsule remarkably small. C. complicatus is a variety of this species, with small purplish-red flowers, and a native of the Levant.

5. The Cretan Gum Cistus (Cistus creticus).—This is a low shrub, 2 ft. high, flowers in June and July, and is a native of Greece, Syria, and Crete. It is rather tender in the neighbourhood of London, and requires protection in the winter. C. crispatus and C. taurieus are varieties of it, and C. undulatus and C. crispus are synonymous names for it. The leaves of the Cretan Gum Cistus vary considerably both in size and form; some are linear-oblong, others oblong elliptic; they are nerved, tomentosely hairy, wrinkled, waved on the edges, tapering or drawn down to the foot-stalk, which is of a whitish-green colour, thickly covered with hairs. The flower-stalks are one-flowered, and the petals purple, with a yellow mark near the base of each; the sepals are acute and villose.

The White-flowered Section.

6. The Sage-leaved Gum Cistus (Cistus salviæfolius).—This species is widely dispersed, for it is found in the south of France, Spain, Italy, Greece, and Switzerland. It forms a branching, dense shrub, 2 ft. high, clothed with whitish or pale green leaves, which, like every other part of the plant, are covered with numerous short hairs; the flowers are white, and medium in size, and are produced abundantly in July and August. It is very hardy, and grows freely in the open border, when planted in a dry situation fully exposed to the sun; the leaves are rather small, ovate, blunt at the point, wrinkled, tomentose on the under side, and with very short foot-stalks; the flowers are produced in one or three together, and stand well above the leaves. C. obtusifolius is a dwarf variety.

7. The Corbiere Gum Cistus (Cistus corbariensis).—During the months of June and July this plant is covered with a profusion of white flowers, with the margins and young buds tinged with rose colour, and each of the petals marked at the base with yellow. It is a native of Sicily, and grows about 2½ ft. high. The leaves are somewhat cordate-ovate, pointed, netted-veined, wrinkled on both surfaces, on long foot-stalks, glutinous, and fringed on the margins; the flower-stalks are long, erect, and one or three flowered. This is one of the hardiest of the species, and is easily distinguished by its heart-shaped, wrinkled, light-green leaves, and the abundance of its flowers, which stand well above the foliage. C. Cupanianus and C. acutifolius are varieties which differ from the ordinary form of the species in their rather prostrate, twiggy-spreading, and more robust habit. C. acutifolius is the C. salviæfolius humifusus of De Candolle.

8. The Small-leaved Gum Cistus (Cistus parvifolius).—A dense, erect, many-branched, small shrub, 2 ft. high, native of the south of Europe, and flowers profusely in June and July. The branches are rather crowded, erect, and densely woolly; the leaves are about 1½ in. long and 4 lines broad in the widest part; they are ovate, tapering much to the point, somewhat rounded at the base, waved, and slightly crenulated on the edges, wrinkled above, strongly netted with prominent veins, somewhat three-nerved beneath, hairy on both surfaces, on short foot-stalks, and rather hoary on the younger parts. The flowers are small, white, axillary, and on long, slender foot-stalks, having two flowers on each, which stand well above the foliage, and before expansion nodding; the sepals are pointed and tomentose on the margins; the capsules are small and covered by the calyx. It is one of the hardiest.

9. The Montpellier Gum Cistus (Cistus monspeliensis).—A fine, free-growing, and hardy variety, which flowers abundantly in June and July in the open border. It is a native of the south of France, Spain, and Portugal, and grows from 2 ft. to 3 ft. high. The leaves are linear-lanceolate, three-nerved, without foot-stalks, clammy and villose on both surfaces; the flowers are medium-sized, white, with the petals broadly wedge-shaped, and produced in terminal close cymes, which are pilose. C. platysepalus has broader petals, with a yellow mark at the base of each.

10. The Hairy Gum Cistus (Cistus hirsutus).—This kind forms a pretty branching bush, readily distinguished by its very large, pyramidal calyxes and small capsules. It bears an ordinary English winter in the open border without protection, and produces a great profusion of its white flowers, which expand in succession for a considerable time. It is a native of France and Spain, and will be found on the mountains flowering in June and July. The leaves are oblong, blunt, hairy, and without foot-stalks; the flowers are white, with a yellow mark at the base of the petals, and produced on short, one-flowered foot-stalks, or corymbosely many-flowered clusters.

11. The Loose-flowered Gum Cistus (Cistus laxus).—An erect, sub-evergreen shrub, about 3 ft. high, producing its white flowers freely from June to August. It is a native of Spain and Portugal, and one of the hardiest, for it will grow freely in the open

border without any protection, provided that it be planted in a situation that is dry and fully exposed to the sun. The leaves are ovate-lanceolate, on short foot-stalks, with wavy margins, sometimes slightly toothed and smooth, with the upper ones hairy; the flowers are in loose, flat panicles or cymes, with the stalks and calyxes hairy.

12. The Poplar-leaved Gum Cistus (Cistus populifolius).—This is a robust-growing, sub-evergreen shrub, from 4 ft. to 6 ft. high, with large, showy, white flowers, having distinct petals, and produced in succession in great abundance, in somewhat flattened panicles or cymes, with oblong, deciduous bracts. It is a native of the south of France, Spain, and Portugal, and is one of the hardiest of all the species, requiring but slight protection even in severe winters. Leaves dark green, wrinkled, leathery, shining, cordate, pointed, and stalked, with wavy margins, and smooth on both surfaces; the bracts are clammy, the sepals pointed, and the flower-stalks and calyxes smooth, shining, and clammy. C. longifolius, C. cordifolius, and C. latifolius (populifolius major), are forms of this kind, and it is also known under the name of C. populifolius minor.

13. The Laurel-leaved Gum Cistus (Cistus laurifolius).—A handsome, strong-growing, sub-evergreen bush, from 5 ft. to 6 ft. high, with large bright Laurel-like leaves and a profusion of flowers in July and August, which, with the light red bracts, are very ornamental before they expand. It is a native of the south of France and Spain, and requires no protection in winter in the neighbourhood of London. The leaves are large, broadly ovate or ovate-lanceolate, three-nerved, leathery in texture, slightly undulated on the margins, deep green and smooth on the upper surface, with the under one tomentose; on long foot-stalks, widened and joined at the base; the flowers are large, white, with a yellow mark at the base of each petal, and are produced several together in terminal, long-stalked cymes, and sometimes in additional distant pairs lower down the flower-stalk; the stalks are tomentose, and the calyxes hairy, acute-pointed, and frequently tinted with purple.

14. The Resinous Gum Cistus (Cistus ladaniferus).—This is a splendid sub-evergreen shrub, from 5 ft. to 6 ft. high, and the handsomest of all the Cistus family. It is a native of the island of Cyprus, Spain, and Portugal, and is found on hills. It flowers profusely in July and August, but requires some protection in severe winters when young. The leaves are oblong-lanceolate, leathery in texture, three-nerved, more or less undulated on the edges, with the upper surface deep green, smooth, and shining, the under one clothed with hoary tomentum, and the foot-stalks rather long, widened, and joined at the base; the flowers are large, sometimes 3 in. across, and produced three or four together at the ends of long, terminal, bracteated flower-stalks; the petals are white, yellow at the base, and with a large, rich, brownish-crimson, fringed spot on each above the yellow base. C. cyprius, C. salicifolius, C. stenophyllus, and C. planifolius are mere forms of this species, which vary much in the foliage and marking of the flowers, the leaves on some plants being very much undulated, while in others they are flat, and the crimson spot is much larger and more intense in some than in others.

15. The Portuguese Gum Cistus (Cistus lusitanicus).—This plant forms a very neat, dwarf, many-branched bush, 2 ft. high, with rather small, linear-lanceolate, acute-pointed, deep green leaves, which are smooth on both surfaces in the mature state, and with the flower-stalks and calyxes thickly clothed with long, silky, white hairs. It is easily distinguished by the small, crimson spots on the petals. The leaves are three-nerved, netted on the under side, and without foot-stalks; the flowers are moderately large, on long, terminal foot-stalks; and mostly in pairs at the ends, and enclosed by broad, leaf-like bracts; the petals are white, yellow at the base, and with a small, feather-edged, reddish-crimson spot above the yellow base; the calyx is composed of four or five broad, leaf-like divisions, and, like the flower-stalk, is thickly covered with long, silky hairs. Flowers abundantly in June and July, and is a native of Portugal.

16. Clusius' Gum Cistus (Cistus Clusii).—This is a somewhat erect, dense, greenish shrub, about 2 ft. high, with numerous secondary, short branchlets. It is a native of Spain and Barbary, and flowers freely in June and July. The leaves are small, linear, very narrow, somewhat three-nerved, revolute on the margins, and canescent on the under surface. The flowers are in rather close heads, on long, terminal flower-stalks, small, white, yellow at the base inside, and with broad, ovate, pointed, pilose bracts, somewhat longer than the small flower-stalks, and soon falling off. The calyx is three or five-sepaled and pilose. This variety stands the winter well in the open border, if planted in a dry situation; it is frequently named C. Ledum in the catalogues.

The Helianthemum formosum, which is frequently misnamed Cistus formosus in nursery catalogues, deserves a place in all collections; it forms a neat, handsome, erect, slender shrub, 3 ft. or 4 ft. high, with tomentosely-villose branches, and small, obovate-lanceolate, villose leaves, the younger ones being hoary; the flowers are tolerably large, of a deep yellow, marked with a dark crimson spot at the base of each petal, and are produced from May to July. It is a native of Portugal, and requires to be protected in winter by a mat, or planted against a south wall, where it makes a beautiful display for two or three months.

AN EARLY SPRING-FLOWERING SHRUB.

(NUTTALLIA CERASIFORMIS).

This is one of the earliest of all our spring-flowering shrubs, and ought to have a place in every shrubbery border. It is a native of North America and California, where, according to Torrey and Gray's "Flora of N. America," it is found forming undergrowth in thin woods. In our gardens it forms a low shrub from 6 ft. to 8 ft. in height, and produces clusters of delicate, greenish-white flowers early in March, and sometimes even in the month of February. Our engraving represents a young

Nuttallia cerasiformis.

flowering branch of the natural size. The flowers are diœcious, and the plant itself is interesting botanically, as forming the link between the Amygdalus and Spiræa sections of Rosaceæ. It very rarely fruits in this country, but it naturally bears a two to three seeded leathery fruit, consisting of five carpels. A large bush of it formerly existed in the "wilderness" in the Chiswick Gardens, and we have occasionally seen it elsewhere, but it is far from being so common as it deserves to be.

B.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Cork Oak in a New Home.—The Cork Oak appears to succeed as well in California as in its native country. Trees of it planted in 1861 and since pruned up, are now 25 ft. to the lower branches. The bark on these trees is from 1½ in. to 2 in. thick, and the peeling process may soon commence.

Price of Oak in Scotland.—At a public sale of peeled Oak, belonging to the Baroness Willoughby D'Eresby, which took place near Crieff lately, a large sum was realised for the various lots. Among the large standards sold, according to the "Timber Trades Journal," was the trunk of an Oak tree which grew in the deer park adjoining Drummond Castle, and which was purchased by Mr. Phillips, timber merchant, Leith, for £30 5s. This sum, together with £4 5s. obtained for the limbs (sold for firewood), and the price realised for the bark, brings up the value of the tree to about £50. Another Oak tree was sold for £18 10s.

A Utah Shrub (Peraphyllum ramosissimum).—Mr. Siler, writing upon the vegetation of Southern Utah, says this low-growing shrub, with masses of white and sometimes pink flowers and waxy fruit produced in July, is probably the handsomest flowering shrub in Utah. The fruits, like the flowers, differ very much in appearance. Those plants that produce white flowers yield white, waxy fruit; while those producing pink flowers have fruit with bright flesh-coloured skin and a beautiful red cheek. This shrub is perfectly hardy, growing usually in clay soil and in the driest localities. It is destined to become a favourite in northern localities.—"Gardeners' Monthly."

PLATE XXXII.

THE MUTISIAS.

(WITH A COLOURED FIGURE OF MUTISIA ILICIFOLIA).

By W. B. HEMSLEY.

A Family or Natural Order of plants, comprising nearly 1000 genera and 10,000 species, should furnish a considerable number, one would suppose, of ornamental species. That this is the case with the Compositæ, the family to which the genus here under review belongs, becomes apparent, if only some of those found in almost every garden be called to mind; such, for instance, as Dahlias, Asters, Chrysanthemums, Marigolds, and Zinnias. To these might be added scores of other familiar "Composites," the Everlasting Flowers, Cinerarias, Sunflowers, the beautiful Blue Cornflower, and a host of others which cannot be catalogued here. But the beautiful tribe to which Mutisia belongs is very inadequately represented in our gardens. Perhaps it is because the members of this tribe are rather difficult to cultivate, that is to say, the conditions under which they will thrive are not thoroughly understood; otherwise, it is not easy to account for the rapid disappearance of several highly-ornamental species from cultivation. The tribe consists of about fifty genera, chiefly found in the sub-tropical and temperate regions of South America, fewer occurring in the tropical regions. A few genera extend to tropical and sub-tropical Africa, the mountains of Northern India, and even to China and Japan. It may be interesting to notice a few of the principal plants of this tribe which are, or have been, in cultivation, before speaking of the Mutisias themselves. Thus Barnadesia rosea ("Botanical Magazine," 4232) is a dwarf, intricately-branched, spiny shrub, with small, obovate leaves and nearly sessile, rose-coloured flower-heads, from South America; Stifftia chrysantha ("Botanical Magazine," 4438), from the same country, is a larger-growing shrub, with very large, showy heads of flowers of an orange-red colour; Ainslæa Walkeri ("Botanical Magazine," 6225) is a recent acquisition from Hong Kong, of herbaceous habit, with narrow, crowded leaves at the base of the stem, which terminates in a large panicle of small flower-heads, the florets of which are white, except about three of the central ones, which are purple; Chætanthera serrata (Sweet, Brit. Fl. Gard., series 2214), from extra-tropical South America, is a dwarf, tufted herb, about 6 in. high, with slender, leafy scapes, terminating in small, yellow flower-heads; Chabræa runcinata (Bot. Mag. 4116), also from extra-tropical South America, is a herbaceous plant, with large, elegantly-cut radical leaves, and small bluish-white or pink flower-heads on a branched stem; Proustia pyrifolia (Bot. Mag. 5489) is an exceedingly elegant shrub, climbing to the tops of the highest trees in Chili, and having its small, white flower-heads borne in large pendent panicles, and succeeded by the rosy-red, plumose, persistent pappus; finally Trixis auriculata (Bot. Mag. 2765) may be mentioned as a pretty, slender, herbaceous plant, with auricled leaves, and small, white flower-heads. But returning to the genus Mutisia, it is here we find some of the most beautiful plants in this vast family. It is not a large genus, numbering only some thirty species, all natives of South America, and chiefly inhabiting the sub-tropical and temperate regions, from the mountains of New Granada to Chili. The species present a most remarkable variety in the forms of their leaves. Roughly, they may be divided into two sets, those with pinnate leaves, closely resembling those of some Leguminoseæ of the Vetch tribe, indeed there is a species called M. viciæfolia, which exhibits this resemblance in a striking degree; and those with simple leaves, of which the one figured is a good representative. All the pinnate-leaved set, except M. viciæfolia, which is an erect shrub, are tall climbers. The simple-leaved set vary from those having short, rigid, sharp-pointed, spine-like leaves, as in M. acerosa, through every gradation up to the prickly-toothed, tendriled leaves of M. ilicifolia. About half-a-dozen different forms have been introduced and cultivated at various times; but it is doubtful whether so many are at present in cultivation. I have now a few words of explanation to offer. What are popularly termed flowers are here termed flower-heads; and without plunging very deeply into botany, I may briefly state the reason why. In all the plants of this family the flowers (florets) are clustered or crowded together at the ends of the flowering-branches, instead of being scattered along them, or each one borne on a separate stalk. Each apparent flower, then, is a cluster of flowers; and the diminutive "floret" is usually applied to the flowers composing these heads. The editor of The Garden is continually requesting me not to be botanical, but I cannot bring myself to call flower-heads flowers in describing a plant. Moreover, those persons who do not already know will not think it is time thrown away to learn a distinction which applies to 10,000 species of plants, and knowing this, the name of the family Compositæ becomes intelligible.

A Selection of Species.

1. *Species with Simple Leaves.*

1. Holly-leaved Mutisia (M. ilicifolia, not illicifolia, as misprinted on the plate—Paxton's "Magazine of Botany," xv., 101; Bot. Mag., t. 6009).—The subject of the plate is a very common and very variable climbing shrub in Chili. The figures quoted represent slightly different varieties, that in the "Botanical Magazine" having nearly white florets tipped only with pink; and the figure in Paxton's "Magazine of Botany" represents a variety with darker green foliage, and smaller flower-heads, and the florets are striped longitudinally with a deeper hue. But the nearest to the plant figured here is the plate 288 of the second series of Sweet's "Flower Garden," where, however, it bears the name of M. latifolia. This appears to be the record of its first introduction here. It was originally introduced in 1832 from seeds collected by Mr. Cuming, in the neighbourhood of Valparaiso, where it is common on the hills, growing among bushes. Sweet states that it was in several collections at that time, but the Rev. Townshend Selwyn, of Kilmington Rectory, Wilts, was the only person who had succeeded in flowering it. He further says the plant has hitherto been kept in a greenhouse, but, from what we have ourselves remarked, we have no doubt of its succeeding well in the open border, planted by a trellis, or near to any tree that is trained to a wall, where it may have an opportunity of extending itself. In Paxton's Mag. we have still more reliable testimony of its hardiness. This was published in 1848, and the figure, we are told, was prepared from specimens grown by Mr. Roy, junior, Aberdeen, who, some years previously, received a plant from Messrs. Low & Son, which was planted against a south wall in his garden, and had flourished there ever since without any other protection than that afforded by the wall. Although it flowered freely it never ripened seeds, but Mr. Roy succeeded in propagating it from cuttings, which struck root freely, either in sand or soil, if placed under a bell-glass in heat. It is unnecessary to dwell upon the ornamental character of this shrub, which appears to have been re-introduced two or three times. Like Lapageria, and many other shrubby plants from the same region, it seems to require careful cultivation, and it certainly deserves a little extra attention in the preparation of the soil intended to receive it. It is a slender, climbing evergreen shrub, very variable in its leaves and young branches, which are either glabrous or more or less clothed, especially on the under surface of the leaves, with a close, woolly or cobwebby tomentum, and more or less prickly-toothed or quite entire on the margin. The flowers, as already observed, are also variable in colour, from pure white to pink and deep purplish-red. The leaves are thick and hard, and the blade is continued down the stem in the form of a prickly wing, or it is simply stem-clashing. Very closely allied species, or what is more probable, forms of M. ilicifolia, have been published under the names of M. retusa, Gayana, Lechleri, and truncata.

2. Wing-stemmed Mutisia (M. decurrens, Bot. Mag., t. 5273).—A dwarf, thinly-branched climber, with narrow, undivided leaves, remarkable for the blade running down the stem in the form of a wing. The flower-heads are large and brilliant, from 4 in. to 5 in. in diameter, and of a deep orange, or almost vermilion colour. The midrib is continued beyond the blade of the leaf into a two-branched tendril. This beautiful species was first introduced and cultivated by Messrs. Veitch, about fifteen years ago, through their collector, Mr. Pearce, who met with it in the Andes of Chili. According to the Bot. Mag. this stood the severe winters of 1860 and 1861 unharmed, in the open air at Exeter, without shelter. What the subsequent fate of this handsome plant has been I know not, but I fear it has almost disappeared from our gardens. A few years ago I received a specimen to name from some part of Devonshire, but I have not since seen living specimens. M. subspinosa is a closely allied species, in which the long narrow leaves are scalloped and prickly-toothed.

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THE HOLLY-LEAVED MUTISIA (M. ILLICIFOLIA).

2. *Species with Compound Leaves.*

3. Aiton's Mutisia (M. speciosa, Bot. Mag., t. 2705; Loddiges' Bot. Cabinet, t. 1809).—This is one of the section with pinnate, Vetch-like leaves; but, although the flower-heads are not altogether devoid of beauty, they are less showy than any other species, and therefore the specific name is misleading in a genus so rich in handsome and showy forms. It, however, appears to have been the first that found its way into our gardens. It is a native of Brazil, and was communicated to the Royal Gardens at Kew by Parmentier, of Paris. It first flowered there in 1826, and is described as a plant of humble growth under cultivation, but probably reaching to a considerable height in its native country; judging from the figure it is deciduous, and the small red flowers of short duration.

4. Large-flowered Mutisia (M. grandiflora, Humboldt's "Plantes Equinoxiales," t. 50).—This must be a truly gorgeous plant, for the brilliant red flower-heads are no less than 6 in. long by 5 in. across the top. It has never yet been introduced, and is probably a very rare plant in its native country, for Humboldt says he found it only in one place, on the mountains of Quindiu. It climbs lofty trees, and, like Cobæa scandens, which it much resembles in its foliage, it would doubtless succeed well in a conservatory, if not in the open air.

5. Lady's Bower Mutisia (M. Clematis, Kerner Hort., 628).—A tall climber, from 10 feet to 20 feet high, with pinnate leaves, terminating in branched tendrils, and large heads of crimson flowers. In the absence of flowers this remarkable species has more the aspect of some leguminous plant than that of a composite plant, the leaves being divided into four to six pairs of oval or oblong, opposite or alternate leaflets, and the midrib or rachis runs out into a long, usually-branched tendril, by means of which the plant climbs. In their young state the under side of the leaves is clothed with a dense, short, fawn-coloured wool. Different collectors describe the flowers as crimson, scarlet, and bright red, but all agree in bestowing great admiration upon the plant. It is a native of the mountains of New Granada, Peru, and Ecuador, where it appears to be a common plant, between 6000 ft. and 11,000 ft. above the sea-level. It is a greenhouse plant, probably no longer in cultivation.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Even the freest-blooming hard-wooded plants usually grown by amateurs, such as Cytisus, Acacias, Clianthus, and Epacrises, are much benefited by some exposure to the open air after their growth is completed. It frequently happens that improper directions are given for the summer treatment of these plants—such as, for example, exposing them to the open air early in the summer, the effect of which is to restrict growth, and, in many cases, to cause the plants to set their flowers at once, and consequently come into bloom before the time they are wanted: this should never occur, for the great charm in a garden is to have some plants coming into flower all through the season, and to keep back, as much as possible, those grown under glass for the winter. Neither is there a necessity for thus exposing any plant in the open air for the length of time often supposed to be needed. With most hard-wooded subjects usually grown in pots a month out-of-doors is sufficient, and it is much better to defer this until there is just enough time for the completion of the ripening process before it is necessary to take them in through danger of frost. For this there is now ample time if the plants be at once put out; they should for the first few days be placed on the north side of a wall, or at a short distance from a tree that will shade them from the mid-day sun till they get a little used to the change. After the plants have been thus gradually inured to the sun, they may be placed where they will be fully under its influence, yet still so far sheltered as not to receive the full force of the wind. The outsides of the pots, especially the side next the sun, should be protected, or the roots which lie thickly against the inner surface will suffer; for this purpose any flexible material, such as a piece of canvas or bast mat tied round will answer the purpose. The drying influences to which plants are subjected when in the open air are much greater than in a pit or greenhouse, requiring closer attention as to watering, especially if the pots be very full of roots; they should be looked over twice a day when the weather is hot. Large-flowered varieties of Pelargoniums that were kept for late flowering should now be cut down, or they will not have sufficient time to make growth before winter. Do not let the soil receive much water afterwards until they have started into growth; the earliest cut-down plants should be shaken out and re-potted as soon as they have made shoots about 2 in. long; a considerable part of the old roots ought to be cut away, consisting of all the finer portions that have been in contact with the sides of the pots, reserving only the stronger roots. This will admit of the removal of the old exhausted soil, replacing it with new; return them to the same pots or to those of a smaller size. Even in the case of those plants that have not yet attained their full size, it is much better to give them a second shift than to overdo them in this respect. An 8-in. pot will suffice for the largest-sized Pelargonium that it is requisite to grow; they cannot bear too much root-room, as it always has the effect of inducing rank leaf-growth. Add one-sixth rotten manure to the loam, and as much sand as will keep it in a porous state without making it too light; in potting, ram the soil quite hard. There are not many plants that require a closer soil than Pelargoniums.

Herbaceous Calceolaria seed should be sown without delay, as upon a vigorous development of the plants before autumn depends, to a great extent, their health through the winter and a satisfactory flowering in the spring. An ordinary seed-pan is the most suitable in which to sow them: put an inch of fine crocks in the bottom, and on this some dry, flaky manure to keep the soil out of the crocks; use finely-sifted soil, with one-fifth leaf-mould, also sifted; add to it one-sixth sand, fill to within an inch of the rim, pressing the surface smooth, and watering it to close up the holes before sowing. This should always be done as a preparation for very small seeds, or they are liable subsequently to get washed down too deeply to germinate; after this, allow the pan to stand for an hour or two before putting in the seed, which should be scattered evenly over the surface, and then covered with about an eighth of an inch of very fine soil (not more than will just hide the seed); press the surface smooth with the bottom of an empty flower-pot, place the pan in a pit, greenhouse, or garden frame, in a position where the sun will not shine upon it so as to dry the soil. If a bell-glass, hand-light, or cloche be at hand to place over the pan till the seeds are up, letting it stand on a moist surface of sand or ashes, the soil will be kept in a fit state for the seed.

Mignonette should now be sown to flower in the winter. For this drain some 6-in. pots; use ordinary loam, to which add one-fifth of leaf-mould and rotten manure, as also some sand; with this fill up the pots to within an inch of the rim, smooth the surface, putting a dozen seeds in each, cover lightly, and keep slightly moist. The seeds will germinate in a week or two, when they must have plenty of light and air. An ordinary garden frame, with the lights off, except in very wet weather, is the most suitable place for them during the next six or eight weeks. There is nothing more acceptable either for cutting, greenhouse, or room decoration through the winter or early spring than Mignonette, and it is very suitable for amateurs to cultivate, the principal point to be observed is to give plenty of air and light in the early stages, so as to keep the plants dwarf and stout; if ever they get weak and drawn up, they are worthless.

Roses in pots that are plunged, or otherwise, must be well attended to with water, and the foliage kept clear from aphides or red spider. It frequently happens that plants of these and other subjects of a hardy nature, that are either forced or brought into flower under glass in the winter, when set out-of-doors during the summer months, are subject to comparative neglect through want of sufficient water, or allowing the leaves to get injured by the attacks of insects, in which case it is useless to expect either an increase of strength or healthy flowering when the time of their blooming arrives. Any plant with its roots confined within the limits of a pot is naturally weaker than when planted out, and is consequently more liable to suffer through the attacks of insects, which, if means be not taken for their immediate destruction, very soon prevent the possibility of a successful growth. To this cause is attributable the disappointment that amateurs often experience with pot Roses, the satisfactory flowering of which depends quite as much upon due attention in the summer as on anything that can be done for them when they are making their growth inside. The plants should be syringed overhead regularly, which will keep the leaves fresh and healthy. Dust with sulphur on the appearance of mildew; if the plants be kept free from this parasite through the summer, they are less liable to be affected with it at the time of flowering.

Peaches that were started as advised, by closing the house so as to use sun-heat, or perchance with the assistance of a little fire-heat during cold weather in the spring, will, if all has gone well, have ripened their fruit and the crop have been cleared. It too often happens that after this the trees are neglected for a time in two ways, viz., insufficient water to the roots, and allowing the foliage to get injured by thrips and red spider, the result of which is that the leaves die and fall off before they have completed their functions, to the consequent weakening of the trees. As soon as the crop is gathered, thoroughly wash the trees with the syringe or garden

engine. The latter is the better implement, and when used with the judgment which a little practice gives, aphides, red spider, and thrips can be washed off without injuring the leaves, rendering the attacks of these pests harmless; whereas if they be permitted to have unmolested possession of the trees, it is useless to look for fruit. Another matter of equal importance is to see that the soil has sufficient moisture. If there be any deficiency in this respect, it is not possible for the fruit-buds to get fully matured, thus destroying the probability of a crop during the ensuing year. The production of weak, partially developed flowers in the spring is generally to be attributed to neglect during the previous season. The roots need not now be kept so wet as when the crop was swelling and the shoots in full growth, but they must not be allowed to get too dry.

Dahlias should always be well secured with stakes to prevent them being blown about and broken by the wind; in giving them this support do not tie them up in the shape of a broom by drawing all the shoots tight to a single stake, for this mode gives them an unnatural, ugly appearance, and when strong winds prevail the whole are frequently blown down together. It is a much more effectual and better-looking plan to use four or five moderate-sized sticks for each plant, to which tie the branches out; this has the double advantage of improving their appearance, and letting light and air through the plants, which keeps them dwarf and strong. Even for ordinary decorative purposes, it is worth while to thin out the branches of Dahlias, for the blooms are developed much finer where this is practised, and the plants necessarily do not get exhausted so soon in the autumn. Water must be given liberally when the ground is at all dry, or they will receive a very severe check; if grown in beds by themselves the whole surface should be mulched over with 3 in. of rotten manure; if in borders amongst other plants, a space ought to be mulched round each Dahlia, as far as the roots extend.

Kitchen Garden.—A little winter Onion seed should be sown: it is better to put some in now, and again in a fortnight's time, than to trust to one sowing; as, in severe winters, the plants from one will frequently succeed when the others fail. Very much depends on the kind of weather prevailing during the autumn; for the young plants of the first sowing will sometimes get a little too large, and in other seasons the second will be too late. Prepare the ground well by deep digging and moderate manuring: sow in rows, 1 ft. apart. In very bleak, cold situations, the White Lisbon, being very hardy, is suitable for sowing; in milder localities, Giant Rocca and Globe Tripoli are good kinds, both very large. Cut out the flower-stems of Globe Artichokes as soon as the heads are gathered: neglect in this matter at this season is often the cause of the plants dying off through the winter. The young growth makes little progress until the old stumps are removed, not having time to get strong enough before autumn.

Greenhouse Plants.

The drying weather we are now experiencing is very trying for greenhouse plants, especially those that are still standing on stages under glass, exposed, as they necessarily are in such a position, to rapid currents of heated air constantly passing amongst them. In such cases the utmost care will be requisite to see that they do not become dry at the root, to obviate which they should be watered several times over to insure the ball of the plant being thoroughly soaked through. The rapid drying they undergo at this season scarcely allows time for the water to penetrate the soil before it is again re-absorbed in the atmosphere, and it therefore frequently occurs that the middle and lower portion of the ball does not get moistened at all. This is particularly the case with Heaths and Azaleas after they have become matted with roots, and where any doubt exists as to their present condition, they should at once be placed in a tub or vessel of some kind that will hold sufficient water to cover the pots, and be allowed to remain in that position till they are well soaked through. If once thoroughly dry this operation takes a long time, and they may with safety be left from twelve to twenty-four hours without the roots receiving any injury. The general appearance of the plants will denote their condition, as they soon have a starved appearance, and before that takes place it may be easily ascertained by lifting them and testing their weight. If light for their size compared with others in a healthy, moist state, the deficiency in weight arises from the ball being dry and full of air instead of containing the proper amount of moisture for the roots. This light, elastic state of the ball has a beneficial effect if it occur not too often, as it keeps the soil in a sweet, healthy state from the thorough aërating it receives. The great point in plant cultivation is to know exactly when to water, and then to give it in sufficient quantity to soak the ball through in order to wet every portion of it, after which the plants should be left till the necessity arises to repeat it. Even the best and most suitable soil may soon be spoilt through careless watering, which at once renders it close and sour, which good treatment in other respects can afterwards rectify. See to maintaining the atmosphere in plant-houses as moist as possible by repeatedly damping the floors, stages, and every other available surface to which water can be applied without being objectionable or causing inconvenience to visitors. Where there is room and convenience to treat the growing stock of plants separately from those in bloom, a thorough syringing should be administered to the former every evening just after closing, and the same operation may with advantage be repeated in the morning during the continuance of such weather as now prevails.

Kalosanthes.—The beauty of these will soon be over for the present season, and as they cease flowering the shoots should be cut back to within 2 in. or 3 in. of the stem from which they originated, after which keep the plants in a light, airy position and somewhat dry at the roots till they break again. Cuttings made now soon strike if placed in pits or frames, or on the back shelves of houses where they can receive a little shade during the heat of the day. The ends of the young shoots that have not bloomed are best for the purpose, the strongest of which should be taken off about 6 in. long, and the lower leaves removed by running them round with the finger and thumb, so as to take away the part surrounding the stem and leave the joints bare. This should be done as far up the cuttings as it may be necessary to insert them in the soil, which will be from 1 in. to 2 in. Plants of these cut down now will be too late in breaking to bloom again next season, and it is therefore necessary to forward others that were cut back earlier, or those that did not flower satisfactorily. If the young shoots of such be now allowed to remain intact without any shortening or stopping by taking out the points, they will make splendid specimens for next season, as almost every shoot will bloom if the plants remain in a light situation during the winter. For the present they should be placed out-of-doors, where they can have the full benefit of the sun, that the growth they make may be firm and short-jointed. The exposure must not take place too suddenly if the plants are now under glass, otherwise the leaves will become scorched and disfigured, from which they will never recover.

Herbaceous Calceolarias.—The great value of these for spring decoration renders their culture very desirable, and, in order to get fine, strong-flowering plants, seed should be sown at once. To induce these to germinate freely, they must be well cared for, and never allowed to become dry or be exposed to the sun. The best place for them is under a hand-light, in a shady, moist corner, where they can be kept close till they make their appearance. Before sowing, the pan should be drained, and then filled with fine, loamy soil, made perfectly firm and smooth on the surface by being pressed down to fill up the interstices, and so prevent the seed from being buried too deeply. This done, a gentle watering from a fine-rosed pot should be given, and after the soil has had time to settle, the seed should be sown regularly over the surface, and the top of the pan either covered with a piece of glass or coarse, damp Moss, the object being to intercept evaporation, and so prevent the necessity of watering till after the seeds have germinated. In order to render the atmosphere under the hand-light as moist as possible, the soil or ashes on which it is placed should be well watered before enclosing the pan. If this be covered with Moss, to keep the soil damp it must only remain on a few days, or be closely watched, that it may be removed directly the seeds begin to germinate. Slugs are most destructive to young seedling Calceolarias if they can get at them, and will clear off a whole pan in a single night. To guard against this, it is a good plan to set the pan containing the seed on an inverted pot, placed in water, or strewed round with soot or lime.

Pelargoniums that were placed out to ripen after flowering will now be ready to be cut back, which operation should at once be performed, leaving from three to seven buds or eyes, according to the age or size of the plants and the purpose for which they are likely to be required next year. If desired large, the shoots left after pruning should not be less than 4 in. or 5 in., as these can then be pegged or tied out so as to form the frame or foundation of the future specimen. When pruned, they must be kept somewhat drier than before, as there will be less root action till they begin to break, when a slight increase of water should be administered. Where there is the convenience of a spare pit or frame, they may with advantage be placed therein after pruning, in order to protect them from heavy rains which, from saturating the soil, would prove highly injurious to the roots. An occasional light syringing will be found of great assistance in inducing the buds to push, and suit the plants better than the ball receiving an overdose of water. The fancy varieties, especially, are benefited by this treatment, as they will not endure anything like the same amount of drying off as the

large-leaved kinds, owing to their greater succulency of stem and large, fleshy roots. The tops, as they are taken off, may still be made use of for cuttings, most of which will strike freely if placed in a cold frame or half-spent hot-bed, where they can be shaded and kept moistened overhead occasionally.

Hydrangeas.—As these go out of bloom they should at once be pruned into shape by shortening the long straggling shoots, after which plunge the plants in an open sunny situation, that the growth they make may be compact and short-jointed. So managed they will form large globular, symmetrical heads, which, from the thorough ripening the young growth is sure to receive from exposure during the remainder of the summer, will be laden with massive trusses of flowers, that are always such an ornament during the early spring months. Any one visiting Covent Garden at that season cannot fail to have been struck with the dwarf well-managed plants of those grown in 6-in. or 8-in. pots, each of which carries an enormous head of bloom, varying from 10 in. to 15 in. through. Those who wish to have plants of a similar size and description should set about their propagation as soon as strong cuttings can be obtained, having the flower-buds already formed and visible at the ends of the young shoots to be severed. Such cuttings can generally be obtained from established plants, growing in an open sunny situation, where, in order to assist them to produce a suitable growth, they should be afforded an occasional soaking with liquid manure, or have the surface-soil mulched over by applying it in a solid state. The cuttings should be taken off so as to preserve about three or four pairs of leaves after the necessary trimming has taken place, which will involve the removal of those from the lower joint to admit of inserting them firmly in the soil in which they are to form root. Single pots of small size are the best in which to strike them, as then they can be shifted on into others without any further check to the leaves or newly-formed roots. In preparing the pots, place only a single crock over the hole, and on this a few small pieces of dry crusty manure, afterwards filling up the pots with good fibry loam in which to insert the cuttings. The pots containing them should then be plunged in slight bottom-heat, under the protection of hand-lights or a glazed frame, in which they should have plenty of air after the first few days to keep the tops cool and prevent the buds from starting, which a close moist heat would induce them to do. In order to keep the leaves fresh and prevent them from flagging, they should be frequently syringed and kept well shaded from the sun till the roots are formed, after which the shading should be gradually dispensed with, and the plants receive their final shift into 6-in. pots. The variegated varieties of Hydrangea are well deserving cultivation for the beauty of their foliage, independent of the fine heads of bloom they produce, almost equalling in that respect any of the green-leaved kinds. When forced early they show much more delicacy of colouring than if grown naturally, and are therefore doubly valuable on that account. Where ornamental-foliaged plants are in request for decorative purposes during the early spring, no better subjects can be had than the two fine forms of the above, known as H. aurea variegata and H. argentea variegata. These may be propagated at any time when cuttings can be obtained, and as they are most useful for the ornamental appearance of their foliage, the object should be to get them to a good size as quickly as possible, which may be accomplished by potting them in rich soil, and growing them under glass in a moist atmosphere, where they can get the benefit of a little shade.

Primulas.—The earliest of these should now be of sufficient size to be transferred to their flowering pots, which need not be larger than 6 in., unless very fine specimens be aimed at. A soil composed principally of loam and leaf-soil in about equal proportions, is the best in which to grow them; the leaf-soil should be well decomposed, and when that is not readily obtainable, good fibry peat may be substituted for it. In potting press the soil firmly around the old ball, and afterwards keep the plants erect in position by sticking a few small twigs close to their stems. During the prevalence of dry, hot weather the plants should be freely syringed overhead every evening, and at other times the floor of the pit or frame in which they are growing kept well damped, that the atmosphere may at all times be sufficiently charged with moisture. Ours are now growing in three-light frames, so placed as to catch the shade of some trees during the greater part of the day, a situation that suits them much better than if more exposed, thus obviating the protection of mats to shelter them from the sun's rays. In open positions, without great watchfulness, they do not get shaded in time, or the mats or other protectors remain on longer than is necessary or desirable for the welfare of the plants, whereby they become drawn, and are, therefore, not so strong and capable of producing flowers as when subjected to plenty of light, under which conditions the growth produced is much stouter and firmer in texture. The backs of the lights should be tilted day and night, to keep the air cool and in a healthy condition.—J. Sheppard, *Woolverstone Park.*

Orchids.

A brisk temperature must be maintained in Orchid-houses all through this month, as many of the plants are in active growth, and if not furnished with a warm atmosphere the young shoots will not have finished growing before the short, dull days will have set in. Where growth is finished the plants must be removed to a cool, dry house to ripen it and prepare them for flowering. From the present time, and throughout the season, the plants should be gone over once a week, and those which are ready for resting selected and treated as recommended. It is highly important that Orchids should have a season of rest (differing in duration according to the nature of the plant) after growth is finished, and even cultivators who have only one Orchid-house can manage to give them that if but ordinary care be taken. If there be no convenience for moving the plants while resting into a house by themselves, they should be placed in the coolest and driest part of the house in which they have made their growth, or they should be placed on a shelf or suspended from the roof where air can be freely admitted, water being withheld, unless the plants show signs of shrivelling, when a small supply should be given them. Water should be frequently thrown under the stages and about the houses in which Orchids are growing, and a good supply of it should be given to all plants in an active state. Removing thrips, scale, &c., is a matter which requires constant attention. A collection of plants may easily be kept clean by picking out and cleaning one here and there as they may require it. This is much to be preferred to severe cleanings at long intervals. Cattleyas, Lælias, Aerides, Vandas, &c., are often greatly injured by such so-called thorough cleanings, and bear traces of the treatment to which they have been subjected for years. The temperatures during August should be East India or warm house, from 75° to 85° by day and 70° at night; that of the Cattleya or intermediate house from 70° to 80° by day and 65° at night; and that of the Odontoglossum or cool house from 60° to 70° by day and 55° at night. The higher day temperatures are for sun-heat. Those who have but one house should treat it as an intermediate house, carefully attending to the ventilation and arranging the plants according to their respective requirements.—James O'Brien.

Roses.

As the budding season is getting far advanced, those who have Briers or Stocks should "work" them before the bark gets set. Before operating give the Stocks a good soaking of water, which will cause the sap to flow more freely than it otherwise would do, and use cotton for tying, so as to protect the bud from getting dried up too soon. The season being dry and hot, Roses that have been budded should be well attended to with water, and an occasional sprinkle with the syringe overhead will be of benefit to them. Roses on gravelly soils will have suffered considerably; they have done so even in clay soils in cases in which watering has been neglected. As soon as the first bloom is over, Roses should have a good soaking of water, at the same time clearing the plants of dead foliage and flowers. Where cut flowers are in great demand the plants must be well looked after, and if well treated they will keep up a good succession. Tender Roses have not done well this season, owing to the cold, late spring which we experienced, especially Maréchal Niel, but now they are making good growth and will no doubt produce plenty of fine flowers in autumn. Climbing Roses out of flower should be cleaned, and the young growth tied so as to keep them neat in appearance. Shorten back any very strong shoots in the case of standards or dwarf bushes, so as to keep them even in growth and well shaped.—H. G.

Old Orange Trees.—There is an Orange tree in the yard of the Convent of St. Sabina, at Rome, said to have been planted by St. Dominic in 1200. In the neighbourhood of Finale is an Orange tree which bears nearly 8000 Oranges in a single year. There are in Holland many Orange trees which have been in the same family 200 and 300 years.

Shephardia rotundifolia (Parry).—This presents to the beholder, at first sight, so bright and silvery an appearance, that people seeing it for the first time exclaim—oh, how beautiful, how much like silver! The leaves of this shrub are covered with short, soft hairs that give it its silvery appearance; they are very thick and round in shape; the flowers are small and inconspicuous, being of a dull yellow; and the female flowers, which are borne on separate plants, are almost apetalous; but the greatest beauty about this plant is its flower-buds, which are full-sized in December, although it does not flower until early spring. These buds, round on the male, oblong on the female plants, are, according to Mr. Siler, writing in the "Gardeners' Monthly," to all appearance little balls of silver; the fruit, which ripens in June and July, is about ½-in. long by ¼-in. wide, and is covered with stinging hairs, which, when examined under the glass, look like stars. This shrub is an evergreen.

NEW RACES OF CROTONS.

A SINGULAR fact, and one to which the attention of horticulturists has repeatedly been directed is, that many—very many of the most beautiful and useful plants now grown in our gardens are the progeny of types which have been long cultivated by the inhabitants of other countries. The Tree Peony, Chrysanthemums, Roses, and Primroses of China were cultivated for ages in that country ere they were introduced to our gardens; the same remark applies to most of our fruit trees and many of our culinary vegetables, and it also holds good with respect to the beautiful group of evergreen stove shrubs now under notice. The original species or types from which many of our decorative and useful plants have originated are now unknown, and this appears to be the case in regard to Crotons, since the green-leaved type appears to be unknown, at any rate in this country. C. pictum is the accepted type from which the numerous and exceedingly variable varieties in cultivation have originated, partly as wild or native seedlings or sports, and partly as cross-bred garden varieties in this country. In the Moluccas and South Sea Islands, C. pictum is largely cultivated by the natives and settlers as a decorative shrub; it is also used for fencing the enclosures around their dwellings, and the branches are often employed for decoration on festive occasions along with the foliage of the Dracænas, of which D. ferrea is the oldest cultivated type. Crotons of all kinds are readily propagated by means of cuttings made of the young lateral shoots; these root freely if inserted in a well-drained cutting pot and plunged in a genial bottom-heat of from 75° to 80°. The best compost for Crotons is a matter of some importance. Fibrous loam, leaf-mould, and peat, in equal proportions with a little coarse, well-mashed sandstone grit, make an excellent compost for Crotons, and when they are well established, manurial stimulants can be added in the form of liquid manure; this is better than adding solid manure to the soil when potting. The chief points requiring attention in the culture of Crotons are ample heat, full exposure to light, and good ventilation: low, light, span-roofed houses suit them best, and if the glass be stippled with whiting—or, better still, a thin piece of tiffany be suspended an inch or two below the glass to intercept the direct rays of the sun, the leaves will become all the better coloured. One of the best cultivators of Crotons with whom I am acquainted plunges the pots in a bark bed when he starts his plants in spring, and thus treated they grow most luxuriantly; he also turns them regularly round once or twice a week, so as to give every leaf an equal share of direct light. If the house in which Crotons, Dracænas, and similar plants are grown be well ventilated and kept moist, it is next to impossible to give them too much heat when growing, for it is useless to try to grow good Crotons under cool treatment. Occasional sponging is beneficial, and a sharp eye must be kept for thrips, scale, and mealy bug. The extreme variety observable in the leaves of Crotons deserves attention. The earliest form of leaf, as shown in C. pictum, is oblong lance-shaped, or Laurel-like; the next strikingly distinct leaf was that of C. angustifolium, a linear, drooping leaf, with a more or less undulating margin; then came narrow, lance-shaped leaves, with undulated edges, as in C. undulatum; and broad, smooth, Aucuba-like leaves, as in C. maximum and C. Hookeri. These were succeeded by interrupted linear foliage, as in C. interruptum, and others; linear leaves twisted corkscrew fashion, as in C. spirale; and convolute or ram's-horn-shaped, as in C. volutum; and the latest additions are varieties with long, broad, regular, or irregular strap-shaped leaves, or with the halberd-like or trilobed foliage, as figured on p. 141. New varieties of Crotons are readily obtainable from seed, but as the male and female flowers are borne on different flower-spikes, it follows that cross-fertilisation is necessary in order to secure seed. Any two good varieties may be crossed, and the result is sure to be interesting, but with the extreme variety now at command cultivators generally will be satisfied with the sorts already in cultivation. Of these the best are included in the following list:—

Croton pictum.—This, one of the oldest of all the varieties, is yet often met with in the form of a specimen plant in good collections. When well grown it attains a height of from 2 ft. to 5 ft., and is of compact, pyramidal habit, and when well coloured by full exposure to the light the foliage acquires ever-varying tints of gold, bronze, brown, green, yellow, and crimson. The plant is very robust, and easily cultivated.

C. variegatum.—This is one of the commonest of all Crotons, nevertheless, when well grown, it is very effective. Its leaves, which are oblong lance-shaped, are about 6 in. in length, the ground colour being bright green mottled, marbled-veined, and spotted with golden yellow. When well grown it forms a large and handsome exhibition plant, but it has now been surpassed by the long-leaved C. Weismanni and others. A variety of this plant, C. variegatum longifolium, is distinct, and well worth culture as a table plant or for exhibition purposes. Its leaves are from 6 in. to 10 in. in length, and heavily mottled with golden yellow.

C. angustifolium.—Although old this is still one of the best of all decorative Crotons, and when well grown is unsurpassed by any other variety in graceful beauty. Its leaves, which are from 8 in. to 14 in. in length, and about half-an-inch in width, are bright green mottled and blotched with gold, the young leaves being nearly all yellow. Cuttings of it struck in heat in February and grown on in a fresh open compost near the glass, form handsome plants from 1 ft. to 18 in. in height in about nine months, and in that condition make excellent table plants, contrasting well with the more sombre tints of Palms and Ferns. Like the other varieties, it grows best in a high temperature and humid atmosphere in a position near the glass, where it can get plenty of sun-light.

C. Weismanni.—A remarkably distinct, ornamental-foliaged plant, in habit somewhat resembling C. variegatum longifolium, with long, narrow leaves, striped and mottled with gold of the brightest possible hue. It is of very graceful habit and of free growth, the leaves attaining 10 in. to 12 in. in length, and about three-quarters of an inch wide, very acute at the apex. The upper surface is of a dark shining green, with gold blotches, the mid-rib and margins golden yellow, while the under surface is similar, but of a paler green. When well grown this variety attains a height of from 5 ft. to 6 ft., and forms a pyramidal mass of bright, golden-mottled leaves. It is one of the best of all the newer kinds of Crotons for purposes of exhibition, and smaller plants of it form bright and charming specimens for dinner table or room decoration when used along with Palms and Ferns.

C. Veitchianum.—This plant, which was introduced from the South Sea Islands by Messrs. Veitch, has foliage of great size, and is distinct as regards colouring. The leaves attain a length of from 12 in. to 14 in. by 2½ in. wide, the young leaves being traversed by broad bands of creamy-yellow, which change with age into rose and carmine-purple, the intensity of these colours increasing as the leaves become older. It is a very effective variety, either for exhibition or decorative purposes, and well deserves culture.

C. grande.—A fine, bold-habited stove plant from the South Sea Islands, oblong-obovate leaves 8 in. long and nearly half as much in width, with a stout foot-stalk varying from 1 in. to 2½ in. in length. These leaves are, in the young state, of a rich deep green, with a yellowish rib and scattered yellow spots, the stalks being pale-coloured at the base and apex, where they are also thickened. As the plants gain maturity they become more distinctly veined and spotted with yellow. It has received several certificates, and is a very desirable decorative plant.

C. spirale.—This is a very distinct and effective variety, both on account of its form and colouring. The spiral twisting of the leaf blade, which has suggested its name, is very marked and very constant. The leaves are from 9 in. to 12 in. long, and about an inch wide, deep green, with a broad, golden, yellow bar up the centre, the green margin twisting spirally around the golden bar, some leaves being partly spiral and partly undulate. The older leaves become a deep bronzy-green, almost purple, and the midrib a deep crimson. This is one of the best of the Crotons for ornamental purposes. It is a South Sea Island kind, and was awarded a first-class certificate by the Floral Committee of the Royal Horticultural Society.

C. Youngi.—This is a useful variety, perfectly distinct in every way from any other kind yet known. It is of noble and graceful habit, the leaves being of great substance, from 1½ ft. to 2 ft. in length by three-quarters of an inch in width, deep red underneath, while the upper surface is dark green, densely blotched, and suffused with creamy yellow and bright rosy-red. The habit of the plant is graceful, and it has a noble and yet elegant and light appearance, and the variegation is rich and effective. It well deserves a place as a decorative plant or for dinner-table decoration, when in a small state.

C. volutum.—A very distinct-looking form, the great peculiarity of which consists in the leaves being rolled up from the end in a volute, after the manner of the curving of a ram's horn. These

leaves are 6 in. long, and 1½ in. or more in breadth, and beautifully coloured. The ground colour is a deep green, a golden bar a quarter of an inch wide runs down the centre, from which yellow veins diverge at about half-inch intervals, and meet near to, and so as to coalesce with, the golden margin, in which occur irregularly-scattered green spots. The markings are very regular, a little pink sometimes appearing in the midrib; the curving of the leaf-blade is also very constant, causing the edges to be elevated so as to form a kind of channel. The bark of the young shoots is also variegated with yellow. It is one of the most beautiful and effective among the many fine Crotons which have come to us from the islands of the South Seas. It has received a first-class certificate from the Royal Horticultural Society, under the temporary name of C. cornigerum, which is not properly applicable to it. This plant has been exhibited in good condition by Mr. Bull, but it is better adapted for ordinary purposes of stove decoration than as an exhibition plant. It is one of the most peculiar and distinct in the whole group, and should find a place in every plant-stove.

C. majesticum.—This is one of the finest of this extensive family of plants. It is free-growing, with narrow, elongated leaves; when young they are deep green, with golden rib and markings, representing venation, but more or less confluent; in the more matured foliage the green takes on a deep olive hue, while the yellow portion changes to crimson, the intermediate leaves being coloured with intermediate tints. The regularly-drooping, elongate leaves give the plant a very elegant character. It is a native of the South Sea Islands, and is well deserving of culture.

C. undulatum.—This is one of the most beautiful varieties of the fine collection of Crotons brought to this country by Mr. J. G. Veitch, from the South Sea Islands. It is of the usual free Croton growth, the edges of the leaves being beautifully undulated and wavy, and the variegation consisting of numerous markings and blotches, which, in the matured leaves, are of the brightest crimson on a dark green ground, and in the young leaves at first yellow, gradually chinging to pink and crimson, the base of the petiole being a very light green. As a plant for table decoration it will be an universal favourite, the colours by gas or lamp-light having a magnificent effect. This kind may perhaps be best described as a narrow-leaved variety of C. pictum, with wavy, margined leaves, and when well grown near the light, so as to properly develop its colour, it is a very useful plant for purposes of exhibition.

C. chrysophyllum.—A very dwarf, bushy-habited plant, with comparatively small, crowded leaves, the lower ones green with a golden rib, but all those near the end of the branches bright yellow in the basal half, the upper half being green, or green with golden rib. The peculiar style of colouring, which might almost be called golden-crowned, and dwarf, close habit of the plant, give it a very distinct appearance. It is pre-eminently suitable as a dinner table plant, for which purpose it is worth growing; but its dwarf habit is against its being of any service as an exhibition plant.

C. picturatum.—A handsome and distinct variety obtained from the New Hebrides. It is highly-coloured and effective, as well as singular in its development. The older leaves are some 18 in. long and about 1 in. broad, somewhat irregular at the edge, and with a tendency towards spiral contortion. The midrib is bright red, and the surface is marked throughout in an irregular blotchy manner with clear yellow passing to red. In certain stages of growth leaves of a different character are produced; there is, for example, an oblong

Croton Cooperi.

leafy peltate base, from the back of which the costa is continued like an excurrent thread, at the end of which is appended another elongate leafy portion, having a cupped or peltate base. The form of these parts is very variable.

C. Bismarcki.—This is one of the distinct forms recently introduced from the South Sea Islands, and may be taken as intermediate between the Aucuba-leaved and the hastate-leaved groups. The leaf is nearly fiddle-shaped, the obovate basal part being the broadest, the middle of the leaf being narrowed, and the apex again expanded into an ovate-shaped blade. The leaf is dark green, with a golden band along the midrib, and the veins are indicated by irregular yellow lines, among which a few blotches are interspersed.

C. concinnum.—A new variety close and neat in habit, the variegation being regular and well marked. The leaves are lanceolate, and from 5 in. to 10 in. in length, of a bright green colour, the midrib being indicated by a broad golden band, from which the principal lateral veins spring in their yellow lines, which meet and ramify into each other near their extremities. When well grown the midrib and principal veins and petioles acquire a bright carmine or crimson tint, and the plant is then very ornamental. It well deserves culture for dinner table decoration, or as any ordinary stove plant.

C. contortum.—This is a singular and irregular plant, and one not particularly attractive, but the variety of form assumed by the leaves renders it interesting. The leaf-blades are generally long and narrow, but some are very much undulated at the margin, others spirally twisted, and others are narrowed as well as undulated or twisted, scarcely any two leaves being alike on the whole plant. The apices of the leaves are somewhat rounded, and are terminated by a more or less excurrent thread or awn. It is a plant that deserves culture on account of its variability.

C. imperiale.—This is a remarkable form from the New Hebrides, the leaves of which are very stout and leathery in texture, very unequal in length, bluntly rounded at the apex, and with the midrib excurrent in the form of an awl-like point about 1 in. below the point of the leaf. Many of the leaves are more or less twisted, looking as if the upper half had been taken between the thumb and finger, and allowed to remain fixed after it had been twisted half round. The course of the midrib is yellow, ultimately becoming crimson, so that the variegation is crimson and gold on a dark green ground, the surface of the leaf being mottled with crimson and red. It makes a sturdy and handsome specimen, and well deserves culture.

C. Macafeeanum.—This is a handsome, broad-leaved plant, introduced quite recently. Its leaves are oblong-ovate, transversely marked near the centre with a series of mottled blotches which extend from the midrib half-way to the margin, added to which are yellow spots between the veins. When well grown it makes an effective plant, but like all other Crotons it requires an abundance of light and heat in order to colour its foliage well. It has received one or two certificates, and was named by Messrs. Veitch in honour of Mr. Macafee, an Australian gentleman, who has one of the most complete collections of Crotons in cultivation.

C. Cooperi.—This is an elegant-habited variety, having gracefully arching, linear, lance-shaped leaves, with undulating margins and golden or reddish veins on a dark green ground. When well grown it is a most attractive plant, and useful in a young state for table decoration. Our illustration (see p. 139), for which we are indebted to Messrs. Veitch, shows the general contour of the plant admirably.

C. splendidum.—A very handsome variety, introduced from the New Hebrides. It is in some respects like C. majesticum, for though altogether shorter in the leaves, it takes on the same rich crimson and yellow colouring, here and there relieved by a golden patch. The leaves are ligulate or strap-shaped, drooping, in the older ones very dark purplish-green, with a crimson midrib and a line of yellow on each side the red; occasionally there are transverse yellow veins near the edge. The edge is sometimes plane, sometimes undulated, and not unfrequently the laminæ are spirally twisted for two or three turns. Sometimes the colour is bronze-green with a red costa. The handsomest form of vegetation it assumes is a bronzy ground colour with a yellow rib, having a red line down the centre, and slender, lateral veins, yellowish-red above and below.

C. Morti.—A strong-growing, robust, and finely-marked addition to this now comprehensive family. The leaves are large, oblong-elliptic or obovate, broadest on the upper half, acute, or shortly acuminate at the apex, and narrowed to an acute base; they are of a very dark green colour, the costa being marked out by a band of golden yellow ¼ in. wide, and all the principal veins also being broadly marked with yellow; these latter markings meet near the edge, where there is a variegation of broken, reticulated, golden lines. The intermediate spaces are freckled with yellow dots.

C. trilobum.—In this we have the type of an entirely new race of Crotons, having lobate leaves, and therefore quite distinct from those already familiar to us in gardens. The present is the first of this type which was offered in commerce. The leaves are from 9 in. to 10 in. long, the lower third of their length being from 2½ in. to 3 in. wide, narrowing downwards towards the petiole; this broader portion forms in some cases a rounded shoulder, in others a short lobe; the middle portion of the leaf is narrowed, the sides being nearly parallel towards the base, but towards the shortly acuminate apex again bulging out slightly, so that this portion becomes broadest upwards. The more perfectly formed leaves have, in consequence, a kind of hastate or halberd-shaped outline, but with an elongated base. The midrib and principal veins are marked out by lines of golden yellow, and the leaves are variously reticulated and spotted with the same on a green ground; the veins themselves eventually take on a crimson hue, which is extended to the spot, while more or less of the orange tint, caused by the blending of the yellow and red, becomes suffused over the surface, and the under side is of a uniform wine-red in the mature stages. It is a thoroughly distinct and remarkably handsome addition to collections of ornamental-foliaged plants.

C. TRILOBUM ALBERTI.—This is another of the hastiferous forms of Croton which has been recently introduced from the South Sea Islands. In the present form the leaves are wedge-shaped at the base, with a pair of lateral lobes, produced at different points in different leaves, but within the lower half of the leaf, the middle lobe being oblong-spathulate, bulged near the end, and terminating in a short, acute point. The middle and lateral veins are yellow, while a few yellow dots are scattered aberrantly here and there over the surface—this yellow colouring passing to red as it acquires age and exposure.

C. TRILOBUM DISRAELI.—A handsome variety, bearing long-stalked leaves, widening upwards from a wedge-shaped base, and diverging usually into a pair of nearly opposite and equal basal lobes, but sometimes unequally developed, one or other of the lobes being reduced to a roundish shoulder; above this they are contracted, and then near the apex they are somewhat widened again, and then narrowed to an acute point; they are nearly or quite 2 ft. long, and have the midrib and most of the ribs of a golden yellow, with scattered spots of the same colour. These yellow markings assume a crimson tint on full exposure.

C. TRILOBUM LORD CAIRNS.—A fine variety of the three-lobed section, with rich green foliage spotted with yellow, the midrib also being yellow; the leaves are wedge-shaped at the base, with two lateral lobes in the lower half of the leaf. The long middle lobe is broader at the end, and terminates in a short, acute point.

C. TRILOBUM TRAVELLER.—Like the rest of that series, the leaves in this case have a long central and two short lateral lobes. These leaves are of a dark green colour, and are marked by a yellow midrib, and a few yellow, scattered spots. It was imported from the South Sea Islands.

The following are the names of twelve of the best Crotons now in cultivation, viz.:—

angustifolium	majesticum	spirale	undulatum
imperiale	Morti	trilobum	volutum
Macafeeanum	picturatum	trilobum Disraeli	Weismanni

Flower Worshippers.—Dr. George Birdwood writes in the "Athenæum":—"Very beautiful is the Persian's love for flowers. In Bombay I found the Parsees use the Victoria Gardens chiefly to walk in, 'to eat the air'—'to take a constitutional,' as we say. Their enjoyment of it was heartily animal. The Hindu would stroll unsteadfastly through it, attracted from flower to flower, not by its form or colour, but its scent. He would pass from plant to plant, snatching at the flowers and crushing them between his fingers, and taking stray sniffs at the ends of his fingers as if he were taking snuff. His pleasure in the flowers was utterly sensual. Presently, a true Persian, in flowing robe of blue, and on his head his sheepskin hat, 'Black, glossy, curl'd, the fleece of Kar-Kul,' would saunter in, and stand and meditate over every flower he saw, and always as if half in vision. And when at last the vision was fulfilled, and the ideal flower he was seeking found, he would spread his mat and sit before it until the setting of the sun, and then pray before it, and fold up his mat again and go home. And the next night, and night after night, until that particular flower faded away, he would return to it, and bring his friends in ever-increasing troops to it, and sit and sing and play the guitar or lute before it, and they would all together pray there, and after prayer still sit before it, sipping sherbet, and talking the most hilarious and shocking scandal, late into the moonlight; and so again and again every evening until the flower died.

THE KITCHEN GARDEN.

BEANS AND THEIR CULTURE.

Scarlet Runners.

These not only rank amongst the most useful of summer vegetables, but the plants themselves make excellent temporary green screens for hiding unsightly objects. Scarlet Runners are generally raised from seed, but the roots may, if desired, be taken up in autumn and preserved through the winter in dry sand or in soil in any shed or cellar from which frost is excluded. If roots thus wintered be brought out and planted about the latter end of May, they come into bearing a fortnight or three weeks earlier than those raised from seed sown at the same time. We have also seen them left in the ground all winter, protected from frost by a good thick layer of coal ashes placed over the rows. Thus treated they start early in May, if the weather be favourable; and when they have attained the height of 3 ft. or 4 ft., if stopped, will produce Beans much earlier than by any other method; but if a profitable crop be desired, this plan is not to be recommended, as the plants do not continue in bearing so long as those that are raised from seed. Among positions chosen for Scarlet Runners may be named small patches of ground at the corners of walks, planting five or six seeds in a patch, 5 in. or 6 in. apart. Three stout poles or sticks, as used for Peas, are then placed round them in the form of a triangle, bent so as to meet at the top, where they are tied. In small gardens they are often trained over wire or wood-work, so as to form summer houses or coverings for walks. In large gardens the general practice is to sow in open quarters, and where Beans are required as long in the season as they can be obtained and in large quantities, this is undoubtedly the best plan. They should be allowed a distance of at least 6 ft. between the rows, and if more can be afforded them, all the better. For early crops, a few rows may be made close under a south wall or fence, keeping the points regularly pinched out, in order to keep them dwarf and encourage the earlier development of the pods. In this case they will, of course, need no support, but be allowed to lie in a thick row along the ground. Beans may be produced in this way several weeks earlier than in open quarters, but they do not continue so long in bearing, nor do they produce such abundant crops. Where, however, earliness is an object, this plan may be followed with advantage. Seeds for this purpose may either be sown in heat and transplanted, or sown in the open ground where the plants are to remain. The former is the most troublesome, but it is the best where covering is at hand to protect them from cold winds and frosts after they have been planted. If sown in heat, the seeds should be put in about the second week in May, either in boxes or pots, the former being the best; they should be shallow, say not more than 4 in. or 5 in. deep, their size in other respects being of no great importance; they should have holes in their bottoms for drainage, and should be half-filled with half-rotted

Croton trilobum Disraeli.

leaf-mould pressed down rather firmly with the hand; slightly cover with fine soil, and upon this sow in rows 2 in. apart, and cover with about half-an-inch of finely-sifted leaf-mould, giving the whole a good watering. If placed in a Cucumber or Melon frame at "work," they will soon be up, and should be kept as near the glass as possible, in order to prevent them from becoming drawn. After they have made two single leaves, they should be taken to a cold frame or pit, gradually inuring them to the open air, so as to make them as hardy as possible previous to planting out, which may be done the first week in June. Before planting them out, they should have a good watering, and be taken out of the boxes with as much earth adhering to them as possible. Plant either in double or single rows, 4 in. or 5 in. apart, as close to the wall or fence as may be convenient. If they be then well watered and shaded from the sun for a day or two, and protected from cold at night, they will soon make a good start. The first sowing in the open ground for a general crop should be made not earlier than the first week in May, for if they are up before the end of that month they are liable to be cut off with frost unless protection can be afforded them—a rather troublesome matter where large quantities are grown. Some draw drills in which to sow the seeds, but the best way is to plant them in with a dibble about an inch deep, and then draw the rake over the ground to fill in the holes. Double rows are to be preferred to single ones, as they produce more Beans. Each seed should be at least 6 in. apart. Managed in this way they grow strongly, and if stopped when they have attained the height of 5 ft. or 6 ft. they will produce fine large trusses of bloom from top to bottom. Where successions are desired, several sowings must be made. The general rule is to sow one good crop and let that serve all purposes; but if a sowing be made the first week in May, a second a few weeks afterwards, and another not later than the first of July, a continuous supply of young and tender Beans will be the result; the last sowing, however, should be only a small one. Sowing in trenches has lately been much practised, and in some cases no doubt with advantage; but when sown in deeply trenched ground trenches are unnecessary. They are generally made with the view of affording an effectual means of watering the plants: but they necessitate the water being applied close to their bases, which is hurtful rather than beneficial to Runner Beans. Where, however, the earliest crop of Scarlet Runners has to be sown in open quarters, the best way is to take out a trench, say 3 in. or 4 in. deep, laying the soil on each side of it in ridges; Pea wires or bent Hazel sticks may then be placed on the rows after the seed has been sown and covered; they will afford good supports for mat or canvas protections until such time as they will do without covering; if the soil be put back in the trench, earthing-up will not be necessary. As regards sticking, where procurable common Pea-sticks are best adapted for Kidney Beans, but they require to be rather larger and stronger than for Peas; for unless firmly sticked, they are apt to suffer during rough, windy weather. Where, however, such sticks are not obtainable, stout poles, 7 ft. or 8 ft. long, may be used, placing them firmly in the ground at intervals of 12 ft. or 14 ft. apart along each side the row. Slender sticks cut the same length as the distance the poles are apart may then be tied lengthways along the poles 1 ft. or 1½ ft. apart; the tendrils will then twine firmly round the whole, and afford the plants good support. With respect to soil, a light rich loam is best adapted to the growth of the Scarlet Runner, and it should be deep, to allow of the roots descending in time of drought. Previously to planting, the ground should be deeply trenched and enriched by means of a liberal supply of good rotten manure. Where, however, time cannot be spared for this, trenches may be taken out 2 ft. wide and from 2 ft. to 3 ft. deep, according to the depth of the soil. The soil thus taken out should then have plenty of good manure mixed with it, and be re-placed in the trench. If this be done in autumn it will be advantageous.

Varieties.—There are numerous varieties of Runner Beans, but those most generally grown are the common Scarlet Runner and Painted Lady. Carter's Champion has, during the last few years, been largely grown, and deservedly, for it is a fine productive Bean of good quality. There are many other kinds of Runner Beans that are by no means commonly grown, but which are yet of great special merit, and afford also differences in quality and flavour that make them specially acceptable. Allowing the Scarlet Runner, as it is, to be delicious, yet one may tire of eating it every day for weeks in succession, but if alternate dishes of other equally good kinds that differ in character can be furnished, the pleasure of partaking frequently of Runner Beans is enhanced. Two of the very best of these Runners are the Eclipse and the Premier, both little known, but where known much appreciated. The Eclipse is a tall, strong-growing kind, having vine and foliage resembling those of the old Caseknife. The pods are long, flat, and straight, and are quite tender even when old. It is a heavy cropper, and furnishes a very abundant supply. It is also earlier than the Scarlet Runner, and thus assists to lengthen out the Bean season. Ripe seed of Eclipse is medium-sized, flat, and in colour dull green flaked with dark red. Premier differs entirely from Eclipse, inasmuch as it is really a Runner form of the dwarf French Bean, and as its character has been in this respect well maintained for the past ten years, it is, therefore, perfectly reliable. A few years since, when grown with a large number of other kinds at Chiswick, it was considered sufficiently meritorious to receive a first-class certificate, and since then in its peculiar form it has not been excelled. The plant grows to a height of about 5 ft. It commences to crop close to the ground, and continues to bear heavily until the winter. The green pods are very tender and delicious when cooked, and it is altogether a really useful garden vegetable. The coloured-podded Beans are more novel in appearance than useful as table vegetables. The purple-podded kind partakes of the old Caseknife habit of growth and foliage. The pods are long, but soon fill with the seed. They are, as the name implies, purple in colour, and therefore not at all desirable at table. The blooms are also purple, and for a short time look pleasing and attractive. This Bean may be useful, and possibly ornamental to grow as an ordinary climber, but it has no useful place in the kitchen garden. The latest novelties among Runner Beans are the Wax-podded and Yellow-podded, or Butter Beans, the latter name being given more out of compliment to the colour of the pod than to its edible quality. These are termed skinless, or rather, like the pods of the Sugar Pea, they have no lining, and should be cooked and eaten whole. The colour is most objectionable, however, whilst in flavour the Bean is not equal to our green kinds. The varieties of Kidney Bean, whose ripe seed is used for cooking purposes during the winter months, are called Haricots; they come from the East Indies, where the kinds are said to be numerous. The species, however, are not nearly so abundant as is generally supposed; thus the Phaseolus vulgaris includes at least eight of the commonly adopted species of modern botanists, the P. lunatus four, the P. Max or Mungo (which is either dwarf or climbing, like the P. vulgaris) five or six, the P. truxillensis three or four, Dolichos (or rather Vigna) sinensis four or five, Lablab vulgaris at least as many, Canavalia gladiata two or three, and so on. This multiplication of species has not been owing entirely to the considering as botanical species what are mere varieties of cultivation, but in several instances it has arisen from the same varieties having been received from Asia, Africa, and America, and separately described without adverting to their common origin. They are largely grown in some establishments, and are much appreciated by French cooks, who use them in many different ways. The Lima Bean is a kind very little known in England, but nevertheless well worthy of a trial. It is considered by some to be the best of the Bean family. The climate of England is not hot enough to grow it successfully out-of-doors; but after May is passed there are in most places plenty of empty frames, pits, &c., in which it might be grown. It is a climber or runner, but if its tops are kept pinched in, as is often the case with Scarlet Runners, it may be kept in a dwarf state. It is shelled and cooked like Peas; and is also excellent when dried and cooked in winter like Haricots, to which it is greatly superior. Lima Beans are a rather troublesome vegetable to prepare for the table on account of the difficulty of shelling them. In the ordinary Lima there is a great waste of pod; the Beans are set wide apart, and the pod is often so constricted that the halves touch between the Beans. A large

pod will frequently have but two, or at most three Beans, but this can be improved by always selecting for seed the fullest pods. The Lima is a distinct species (Phaseolus lunatus) from the common bush and pole Bean (P. vulgaris), and shows very little disposition to depart from its natural condition, or, as the phrase goes, it will not "break" readily into varieties. Some years ago many experiments were made with the view of producing a low-growing or bush Lima, but its tall-growing disposition could not be overcome. A few years ago Mr. Henry A. Dreer showed some Limas which were considered an improvement upon the ordinary kind. They were the result of a careful selection carried on for some twenty years. In these Beans the pods are not only full, with no spaces between, but are as full as they can stick, the seeds so crowding one another that the ends of the central Beans are square; the Bean is also much thicker than the ordinary kind. A Bean of this description, bearing the same number of pods as one of the ordinary sort, would, we should judge, yield nearly, if not twice, as much in shelled Beans. It is stated that this variety is much more productive than the common species, yielding, as it does, many more pods. The pod being so completely filled, the shelling becomes an easy matter, and the Beans, when cooked, are much superior to the ordinary ones. Some of the tropical species of Beans are exceedingly beautiful, being of an almost dazzlingly-brilliant colour. They are natives of Hindostan, China, and Japan, among which are some that are not only beautiful in their dried state, but the growing plants are so different from our ordinary kinds that one can scarcely believe them to be Beans. A collection of from 50 to 100 kinds of Beans is not difficult to obtain by a little perseverance, and if arranged in neat phials they are very ornamental.

French or Dwarf Beans.

These, though largely grown in some places, are not as a rule cultivated in such quantities as they deserve to be. An early sowing is generally made, in order to be able to pick Kidney Beans before it is possible to have those of the Scarlet Runner type in bearing, but as soon as the latter come in, French Beans are almost lost sight of. For small gardens the French Bean is invaluable as a summer vegetable, being easily grown, requiring no stakes, and being one of the most remunerative of vegetable crops. It may be had out-of-doors, both earlier and later in the season than the taller-growing kinds, owing to its dwarf habit adapting itself to any situation, as for instance under hedges or walls, or other sheltered positions. It also comes into bearing much more quickly than Runners. As regards flavour, the Scarlet Runner has, perhaps the advantage, but market gardeners round London know well the value of the Dwarf Bean, and many of them grow it by the acre. The value of French Beans for forcing, and for furnishing the table with a delicate vegetable throughout the winter cannot be over-estimated; they may be easily grown where hot-water pits or forcing-houses exist, but where such conveniences are not at hand, any attempt at growing them must be abandoned. Some of the varieties of French Bean are allowed to ripen their seeds, which are dried and stored away until wanted for use. These, when properly dressed, form a very desirable dish in winter when other vegetables are scarce. French Beans in their young state are extensively used for pickling.

Sowing and Culture Out-of-Doors.—Where French Beans are grown in the open air without protection, it is impossible to have them fit to gather before the latter end of June or beginning of July, unless it be indeed an exceptionally favourable season. Where, however, they are sown in a warm, dry situation, and somewhat protected from cold winds and late frosts, they may be had fit for table during the second and third week in June. Where it is desirable to have Beans as early in the season as possible, it is a good plan to sow thickly under hand-lights in a warm corner, and then transplant, an operation that should be performed when the plants have made the first pair of rough leaves. After preparing the ground in which they are to be planted, which should be the warmest, driest, and most sheltered available, they may be carefully lifted with as much soil adhering to the roots as possible, and planted in rows 1½ ft. or 2 ft. apart, or in patches, whichever is most practicable; in either case the plants should be about 6 in. apart. If the planting be done early in the day they may receive a gentle watering to settle the soil round the roots; if otherwise, it will be better to leave them unwatered until the next morning. All possible protection should then be given them; if hand-lights be plentiful they are the best, in which case planting in patches should be practised, as the lights can be more easily placed over them, but small twigs of Laurel or Fir placed neatly round them answer the purpose in the absence of anything better. Rough hay-bands stretched lengthways over the rows, about 6 in. or 8 in. from the ground, and firmly secured to stout stakes driven in the ground at each end of the rows, may be employed with advantage. A rough frame made with sticks driven in the ground, and others tied across them to admit of mats, straw hurdles, or any other protecting material being laid upon them at night, are also useful; but whatever is used to protect them, care must be taken so to place it as to avoid draughts as much as possible. Sowings for this purpose may be made in the beginning of April. If the weather be favourable, the ground in which early Beans are to be grown should be deeply dug and left rather rough. The next day when the sun is going down it should be again turned over with a fork, in order to turn the warm soil underneath and expose the cold to the next day's sun. If this can be done two or three days consecutively a great advantage will be gained. The last time on which the soil is moved it should be made fine on the top, to prevent the under soil again becoming cold. When the seed is sown where it is to remain, drills may be drawn with a hoe 2 ft. apart and 2 in. deep, and sufficiently wide to admit of two rows of Beans being placed 3 in. or 4 in. apart. The distance from Bean to Bean in the rows should be 8 in. or 9 in. Where, however, seed is no object they may be sown much thicker and thinned out to the required distances apart, after they are up, by removing the weakest plants. In any case it is advisable to throw in a few extra seeds at the ends of the rows to provide for filling up blanks, which often occur in early crops when the ground is cold and wet. The earliest sowing out-of-doors should be made the second or third week in April, if the weather be favourable, otherwise it is better to wait a little longer. It is not advisable to plant very largely for early crops, unless they are wanted in quantity; it will be found better to make two or three small sowings at intervals of a week or ten days during April; after that the principal or main sowings may be made until up to the middle of June, after which a few smaller sowings should be made for autumn use. The last sowing should not be later than the end of July, unless protection can be afforded the plants in the autumn. For principal crops the plants should be thinned out to 9 in. or 1 ft. apart in the row, the rows being 2½ ft. or 3 ft. asunder, according to the varieties grown. Earthing up the rows is a point that has been much disputed, some growers being of opinion that it is beneficial, whilst others think the reverse. For early crops we should, however, strongly recommend earthing up, as it has a tendency to keep the soil around the roots in a drier, and consequently a warmer state than it otherwise would be; for the main crops, however we would recommend rather deeper planting, and heavy mulchings in dry weather in preference to earthing up. Stopping the points of the shoots is practised by some growers; it is, however, immaterial for general crops, but in the case of early Beans, and those grown under glass, it is decidedly advantageous.

Culture in Pits and Frames.—The method to be adopted for growing Beans under glass must necessarily depend upon the nature of the structures in which they are to be grown. Where only cold pits and frames are employed Beans cannot, of course, be obtained during the winter months, but by a little attention and skill they may be had very late in the autumn, and much earlier in the spring than they can be obtained out-of-doors. If heating material, such as stable litter and leaves, is plentiful, sowings may be made in pits or frames early in March. If pits be used they should be filled up with heating material to within 2 ft. of the glass, firmly treading it down as the work proceeds. This done, a layer of rotten manure or leaf-mould may be spread over the litter to the thickness of 3 in. or 4 in.; 6 in. or 8 in. of soil may then be placed on the top, the lights put on and allowed to remain until the soil is found to have got warm,

when the Beans may be put in rather thickly, eventually thinning out so as to leave the plants 6 in. apart each way. If the soil be dry, watering will be necessary, but too much moisture must be avoided at this season of the year. If a lining of warm manure can be put round the pit it will be beneficial to the growth of the plants. A thick covering will be necessary at night to protect the plants from frost. Where wooden frames or boxes are used, a good bed of leaves and litter should be made, and the box should be placed upon it, building the lining up round the box to the level of the lights, as is done in the case of Cucumbers and Melons. If treated afterwards as recommended for pits, the plants will grow rapidly, *i.e.*, if the weather be at all genial. When they have made two joints beyond the seed leaves, the points may be pricked out, in order to keep them dwarf and sturdy, and cause them to throw out stronger side-shoots than they otherwise would do. If a few small twigs be stuck in the soil between the plants, they will not be so liable to get broken. Abundance of air will be necessary when the plants are well established, but it must be given discriminately, as a rush of cold air suddenly admitted would cause the tender foliage to shrivel, and render the plants worthless. If it be found that too much steam accumulates in the frame during the night, it will be necessary to have a "crack" of air on. Beans may be obtained in this way by the end of May or beginning of June, and, if properly treated, will yield a fair supply until the early out-door crops come into use. If, however, there be convenience, another sowing may be made in the same way a fortnight later, in order to insure a crop in the event of any disaster befalling the first out-door crop. Some growers prefer raising the plants in pots or boxes and transplanting them into frames, and where time can be spared, this plan is not without advantages; others prefer growing them entirely in pots, and plunging them in the pits and frames. Thus managed they come into bearing rather sooner, but they do not generally last so long, neither is the produce so fine as from those planted out. Where, however, Beans are required in the winter, and have to be grown on shelves in houses, then pots are best. Where there are pits heated by flues or hot water-pipes, good Beans may be produced throughout the winter by adopting the same mode of culture as that recommended in the case of cold pits, with the exception that linings will be unnecessary; neither will bottom-heat be needed, but where it is not used growing in pots placed upon boards near the glass is preferable to planting out, as the roots are not then surrounded by such a bulk of cold soil. In order to prolong the Bean season a sowing may be made in August in cold pits or frames; those lately cleared of Melons or Cucumbers will answer perfectly. It is, however, a good plan, previous to sowing to choose a fine, sunny day, and give the soil a good soaking of water, and to wash well all the wood or brick-work with a syringe, after which close the lights and let the sun have full power on the glass; this will quickly put an end to any insects that may have put in an appearance. After sowing the lights may be left off night and day, until the coldness of the weather necessitates their being put on. A good, warm covering should be afforded during cold nights. By this means a good supply of Beans may be had until late in November, unless the weather be very severe. For this crop stopping the shoots is unnecessary, inasmuch as the plants will continue longer in bearing if left undisturbed.

Culture in Houses.—The best place for the culture of Beans is a span-roofed Cucumber or Melon-house, with a path in the centre and a bed on each side. The Beans may either be planted out or grown in pots; if the house can be entirely devoted to them, the former is undoubtedly the best plan, but it seldom happens, except in large establishments, that a whole house can be spared for Beans. Where, however, there is this convenience the best way is to sow the first bed towards the end of September (if sowings have been made in cold pits, &c., to supply late crops), and another in the course of a month. By the time the plants from the second sowing come into bearing the first crop will be over, and should be at once removed, and another sowing made in its place; by this means a good succession may be kept up until Beans are plentiful out of doors. Where the house is sufficiently large to admit of three successional sowings, a more constant supply can of course be depended upon. It, however, often happens that the only house available for forcing Beans has also to be used for growing Cucumbers; where this is the case growing in pots is to be recommended, as they can then be readily removed from place to place as required. Beans associate well with Cucumbers, but they must not be shaded by them. Beans also succeed well in Pine-stoves or Pine-pits, when planted out along the front, where they can get the benefit of sun-light, or they may be grown in pots placed on shelves with considerable success. Shelves on the back of early Vineries, Peach-houses, &c., are also good places for Beans, but where these are the only convenient places in which to grow them, a crop cannot be reckoned on until early in spring, few houses of this description being warm enough for them before the beginning of January.

Pot Culture.—Beans are grown in pots in various ways, some raise the plants in small pots or shallow boxes, and then transfer them to large pots. This is generally done with the view of giving them a check, and thus inducing them to bear quicker than they otherwise would do; but we doubt if such is the case. One thing is certain, the produce is not so fine from plants treated in this way as from those grown on without a check. To get fine Beans we must first get fine plants, but, it sometimes happens that all the available space for growing Beans is occupied by those in a bearing state, then, in order to get a succession as soon as possible plants are raised in small pots because there is not room for large ones until such crops have been gathered. Where, however, it can be done, the most expeditious way is to fill the pots in which they are to remain about three-parts full of soil, put in the Beans rather thickly, deep enough to cover them; and when the plants have grown 1 in. or 2 in. above the rim of the pot, thin them out as required, and fill up with soil to within an inch of the rim. They should be well watered previous to earthing up, and then be allowed to get dry before watering again, as if watered immediately after earthing up the plants are liable to rot off. The most convenient-sized pots for Beans are 8-in. and 9-in. ones; smaller or larger ones will answer, but these sizes are generally used in preference to any others. Three plants will be enough to have in 8-in. pots; 9-in. ones may have four, and so on according to the sizes used. After the points have been picked out as previously mentioned, the plants should be sticked with small twigs, such as those from an old Birch broom; or if grown on shelves they may be supported by pieces of twine strained from end to end on each side of them; if the shelves are against a wall one string will be enough. Frequent syringing on sunny days will be necessary in order to keep the foliage clean and healthy.

Varieties.—These are now so numerous, owing to so many recent introductions having been made, that it is a difficult matter to say which kinds are really the best. Some varieties, although adapted for forcing, are unfit for producing general crops, whilst the best varieties for out-door crops are often comparatively worthless for forcing. The following are a few of the best for forcing or for the first crop out-of-doors; but they should be grown for those purposes only, as they are, both in size of pod and quality, much inferior to good second-early or main-crop kinds. Osborn's Early Forcing is a good variety of dwarf, compact habit, the pods of which, though small, are produced abundantly. Wilmot's Forcing is an excellent kind, a free bearer, and one which produces long pods of good quality; Syon House, Fulmer's Early, and Sir Joseph Paxton are also all excellent in every respect for early work, but for second early and main crops, the following are some of the best:—Canadian Wonder, or Red Flageolet, a rather tall-growing kind, of sturdy habit, producing abundance of fine green pods 6 in. or 7 in. long, of excellent quality; Long-podded Negro is another good kind, but it does not bear so freely as the former; Victoria Dwarf, or Exhibition Dwarf, Cutbush's Giant, Carter's White Advancer, and Salmon Mexican. These are all good for general culture, and also for purposes of exhibition.

Soil and Watering.—French Beans like a light, rich, sweet soil; therefore if the ground is not already possessed of these qualities, good rotten manure or leaf-mould should be added. If worms abound, a good dressing of soot or lime should be given; and if this can be done in the winter, and the ground thrown into ridges or roughly dug, it will be all the better.

For pots and beds under glass the soil should consist of three-quarters light turfy loam, and one-quarter decomposed manure or leaf-mould. Soil in which Cucumbers have recently been growing will generally answer well for Beans. In all cases a sprinkling of soot amongst it will be found beneficial. We have seen trimmings from the edgings of walks, chopped up and mixed with fresh horse-droppings, used for pot culture with the very best results.

Mulching and Watering.—A good mulching of Sea-weed or half-rotted manure from old linings, or litter from Vine borders, applied between the rows of all kinds of Kidney Beans that are grown out-of-doors, will be found beneficial in keeping the soil about the roots in a moist condition, and in promoting a free and luxuriant growth, which is highly necessary to the production of long supplies of fine, tender, and juicy Beans. Copious waterings will be necessary for all kinds of Beans wherever they are grown when they are coming into flower if the weather be dry, otherwise, instead of the blooms setting they will fall off. Manure-water may also be advantageously applied after they are set, but not before, as it promotes so much growth, which is inimical to bearing. Guano-water may be given to those grown in pots with advantage, but it is no better than good manure-water from the stable-yard, or that made from cow manure. Where, however, the latter is used, a little lime should be previously dissolved in it, otherwise it has a tendency to make the soil sour and breed worms. Water in all cases should be applied in a tepid state, and avoid pouring it close to the bases of the stems, as they may be injured by by so doing.

Gathering.—This should in all cases be done as often as the Beans are fit for use, for if only a few be allowed to get old the bearing properties of the plants will be; impaired therefore if seed be required let a small sowing be made expressly for that purpose.

Preserving Beans.—If during the season there is a superabundance of Beans, they may be kept for winter use by cutting them up in the ordinary way and putting them in stone jars with plenty of salt. If the air be kept from them they will come out fresh and green in mid-winter, and their flavour will not be much impaired.

Beans for Exhibition.—In gathering these care must be taken to have all the pods as nearly as possible the same length and age. They should be full grown, but young and brittle, choosing only straight handsome pods for the purpose. If enough cannot be got at one picking, some may be gathered two or three days previous to their being wanted, and if their stalks be inserted in shallow saucers of water and kept in a cool place, they will keep perfectly fresh and green. If they are required to be sent any distance previously to being exhibited, they may be kept quite fresh by packing them in tin boxes between layers of damp Moss, Spinach, or Ivy leaves. During summer leaves of the Ice-plant answer well as packing material.

Slugs, snails, and red spider are the principal enemies of the Kidney Bean, the two former generally attack the young plants as soon as they are up, and whilst the leaves are young and tender; we have frequently seen sad havoc made by them in early crops of Beans. In old houses, too, they are generally to be met with, they will crawl up the walls and upon the shelves, and ruin a crop of Beans in a night or two. The most effectual remedy is to hunt them at night, after it is dark, when they may be found upon the leaves, bent on destruction. Lime, salt, and soot will prevent them travelling if it can be laid in such a manner that they cannot get at the plants without crossing it. Salt must not, however, be placed where rain or water can wash it into the roots of the plants. Red spider can only be kept in subjection by frequently syringing the plants overhead, giving plenty of water at the roots, and, in fact, doing everything calculated to promote free and vigorous growth.

How French Beans are Grown for Market.

Of all market garden summer crops this is the chief; for, when French Beans appear in the market, the demand for Cabbages, Cauliflowers, and Peas begins to decline, Vegetable Marrows being their greatest rivals. French Beans, however, always command a sale, provided they are good and fresh, and overstocking the market with them is almost a thing unknown, but when large quantities of them are introduced prices are materially affected. The Valley of the Thames is perhaps unequalled as regards the growth of this crop, which does best in a deep soil not liable to excessive drought, and that is made light and rich by much working and heavy manurings. As French Beans are short livers and gross feeders, they require manurial substances of such a character as can be speedily turned to account; therefore, land that was richly manured for the previous crop—such as for Celery—and that has also been liberally dressed with short manure, such as that from Mushroom beds or old Cucumber pits for this year's crop suits them best. Newington Wonder and Negro are the principal sorts grown in the London market gardens, and, although old varieties, are reckoned to be the two best. Their productive qualities are great, for when well attended to as regards timely picking of the pods they continue fresh, vigorous, and fruitful for a long time, and their pods, as a rule, are less apt to turn tough and unusable with age than is generally the case with other varieties. The Black Belgian has also found its way into the market gardens; it is a good, dwarf, early sort, much like the Negro, of which it is considered to be a variety. It is very useful for late sowings and for early framework. Some growers prefer the Newington Wonder to all other sorts; it is a very prolific, dwarf-growing sort. Other growers prefer the Negro, which they grow in frames as their earliest, main, and latest crops; but most of them also grow the Newington Wonder.

In Frames and Hand-Lights.—The first crop of French Beans is generally grown in frames, and those just cleared of Cauliflower and Lettuce plants are the ones used for this purpose. The frames being already sufficiently filled with mould, it is pointed over with a spade, and the seeds sown, provided the soil be not cold and wet—which might easily be avoided by keeping on the sashes after removing the late occupants—in four rows under each light, and about 3 in. or 4 in. from seed to seed in the row. The middle of March is the common time for sowing in frames, and then the sashes may be kept close till the seeds germinate, when they should be tilted up a little at the back in favourable weather, but care is always taken to keep the sashes close in the case of cold winds, and to cover them over with mats or litter in the event of frost. As they advance they may be treated more hardily, but judiciously, judging according to the weather. Ater the middle of May, when all fear of frost has passed, the sashes are entirely drawn off throughout the day, if fine, and, as a rule, replaced at night. Beans are commonly picked from frames about the second or third week in June, or about three weeks sooner than the earliest border ones come into use. A few frames, too, are also frequently occupied by French Beans sown thickly, for the purpose of transplanting from thence to the open ground, and to fill any blanks that may exist in the frames in which the sowings for fruiting therein have been made. For the first out-door planting the warmest piece of ground or border that can be spared is devoted, and the Beans are planted therein in little patches under hand-lights. The usual way is, about the first week in April, to draw lines 3 ft. apart across the border, and others 2½ feet asunder lengthways, and upon the middle of every little square thus marked place an ordinary hand-light, under which plant eight French Beans; but they must have been pretty well hardened off previously. If there be not sufficient hand-lights for the whole space to be planted, use half-bushel vegetable baskets, which invert over the plants; and, as they are so open to the wind, they should be covered for a time with mats. As soon as the Beans have got a good hold of the soil and begun to grow, their protection may be removed. Great care must be exercised with hand-light Beans, otherwise they are a deceptive crop, and sometimes die off altogether, especially when nursed too tenderly and changed too suddenly, if the ground be cold and wet, and their top covering insufficient and permeable to frosty winds.

Outdoor Crops.—The first outdoor crop is usually transplanted thence from the frames, and the warmest possible position is selected for this purpose; the real time for so doing entirely depends on the state of the weather and nature of the ground. If the weather be fine, the soil moderately dry and light, and the position warm and sheltered, the plants are

commonly transplanted during the first fortnight of April, but if otherwise, they are delayed a little later. Early French Beans are planted on a south border in front of a wall or thick hedge if possible, which is dug over, and lined off in cross-rows at 18 in. apart, drawing the lines in the form of seed-furrows with a hoe. Herein are planted, 5 in. asunder in the row, near the middle of April, Beans raised in frames; they are earthed up in due time, and, if the weather be favourable, come into bearing a fortnight or three weeks after those grown in frames. Some growers erect barricades of mats in an upright position to stakes driven into the earth, and placed to the windward side of the borders; and they also surround frames containing them, but not covered with sashes, with the same protection to ward off cold and frosty winds, that are always detrimental to this crop. Sowing begins out-of-doors some time during the first fortnight in April, just as the state of the weather and soil permits, and the warmest available position is selected for the purpose. If the ground be free from all other crops at the time of sowing, there is more need for a sheltered place than if it were cropped. In sowing, the lines are drawn at 2 ft., 2½ ft., and sometimes at 3 ft. apart, and the seeds planted about 4 in. or 5 in. asunder. The earliest crop is generally sown on empty ground, otherwise in drills drawn between lines of Cauliflowers, Cabbages, or Lettuces. These crops, instead of being injurious to the French Beans when they appear above ground, are simply beneficial to them, inasmuch as they protect the tender Beans from cold winds until the Beans have gained some strength and the weather becomes mild and warm, by which time the bulk of the Cauliflowers will have been removed for market. Even then, however, the French Beans do not get all the space to themselves, for no sooner is the earth cleared of the other crop than it is loosened a little between every alternate line, and those spaces replanted with Lettuces or Brussels Sprouts. Thus one space contains another catch crop while the other is empty; and, by means of having this empty space to walk in, the gatherers can pick two lines of Beans, one on either side of the empty alley, and never disturb the other crops in the alternate alleys. Should the French Beans have come up well, and be nearly ready for picking before the first occupants of the soil are entirely removed, the alleys are not cropped again until the Beans become exhausted. The drills for sowing are drawn in the morning of a fine day and left until the afternoon, when the seed is sown and some earth drawn over them. The first main sowing is made on the open field about the end of the second or third week in April, under the same circumstances as that already mentioned, or the field may have been previously planted out with Cos Lettuces in lines 12 in., 15 in., or 18 in. apart; between every two lines of these would be sown one of Beans, for which the rows are not drawn to a line but merely done so by guesswork.

First Crop Failures.—Many failures of the first crop take place if sown too early, especially in the case of cold and wet soils. Indeed, in a market garden at Hammersmith about an acre and a half of good ground had been sown about the end of March, in a promising season, with French Beans at 2 ft. apart, the grower being determined to be early. All seemed to prosper for eight days, and the seeds had swollen well, when cold weather set in and the entire crop was lost; but the ground was immediately planted with Walcheren Broccoli, so the loss after all was not so great. Successional sowings are made every fortnight or three weeks, until the end of June, by some growers, but most of the large growers sow their French Beans about the 8th and 20th of April, the first and last week in May, and the first week in July, the Scarlet Runners occupying the interval. The last sowing consists chiefly of the Negro, and just yields a good crop of young and fine pods before being destroyed by frost; whereas, were they sown a fortnight later, they would be apt to be nipped when coming into bloom. French Beans are likewise sown along both sides of Asparagus ridges containing two or more rows in April, in single rows, about 6 ft. or 8 ft. apart, with Custard Marrows grown between them; and in rows 3 ft. apart, with two rows of Shallots or Onions occupying the intervening alleys. Some growers sow late crops in rows 4 ft. apart, and plant two rows of Coleworts in every intervening alley. Before the seeds appear the soil immediately over the seeds is gone over and slightly loosened with an iron-toothed rake so as to permit of an easy egress of the seedlings. When sown in bare fields, even though Lettuces be planted amongst them, a little ridge of soil is frequently drawn to the north or windward side of them as an additional protection from cold winds. Whilst the plants are growing they are rigidly attended to as regards keeping clean and hoeing the soil, and when they reach 4 in. in height they are earthed up a little. The catch crops, too, are cleared away as soon as they are ready, in order to give the French Beans every opportunity of a healthy development, as they are reckoned a very remunerative crop. Those grown in frames come into bearing early in June, just according to how they are treated, and last in good picking condition for six weeks, and those in warm borders begin to fruit in the last week of June or first week in July, and continue to yield a fair crop for nearly two months in a moderately moist season if kept closely picked. The first main crop immediately follows the border ones, and as a rule lasts the longest. Drought makes them short-lived sometimes, but in rich soils and warm, moist seasons the yield is so heavy that it is scarcely possible to pick them as quickly as they grow. Drought, too, induces red spider, with which large fields are sometimes completely overrun, and although this pest is very prejudicial to the health and longevity of the crop, there is no remedy for it. The Beans are gathered by women in baskets, which, when full, they carry on their heads to the ends of the rows, there to leave them to be carted home, where they are washed to remove the grit. They are then packed into round, half-bushel vegetable baskets, which are covered with Rhubarb leaves fastened down with withies, and piled one above another on the waggons that convey them to market three times a week. The market gardeners, as a rule, save their own seeds, and a piece of the first or second main sowing is generally selected for this purpose. The plants in the rows to be saved for seeds are first subjected to two or three pickings for market, then they are left untouched until they are fully ripe, when they are pulled up by the roots, tied into little bundles, and slung in pairs across a fence or rail to dry. Sometimes, too, the haulms are spread over sashes to dry, and in the event of wet weather they are strewed under some spare sashes where they get well dried without receiving any of the rain; they are sometimes spread out over a series of sashes resting on frames, and other sashes laid over them again, and tilted up at back and front so as to permit of a free current of air, where they dry readily. They are then safely housed, and during wintry weather are thrashed, cleaned, and stored in rough brown paper or canvas bags, or placed in drawers, or the corner of a loft, until sowing time arrives. S.

POTATO TRIALS IN NOTTINGHAMSHIRE.

This year I have tried the following six varieties, viz.:—(1) Carter's Perfection; (2) Brezee's Climax; (3) Lady Paget; (4) Peach-blossom; (5) Vermont Beauty; (6) Improved Lemon Kidney. 1 (Carter's Perfection) is a first early, half-round Potato, bright in the skin, moderately prolific, and has shown such good qualities that it will be tried again. No. 2 (Brezee's Climax) is apparently an improved Brezee's Prolific, and not particularly good; Brezee's Prolific, though strong to all appearance, is not so in reality, for it is the very first to become affected by disease, and one on which disease makes the saddest havoc. In this dry and so far diseaseless summer I have found the blight amongst Prolifics, and not at all amongst any of my other varieties. No. 3 (Lady Paget).—The trial of this was cut short by an accident. No. 4 (Peach-blossom).—A round, second early Potato, of good appearance; it has pink eyes, smooth skin, is fairly prolific, and of good size; this will be tried again more extensively. No. 5 (Vermont Beauty).—Worthless; tops 3 ft. 6 in. high, and at bottom only four or five small tubers, red, and not at all inviting. No. 6 (Improved Lemon Kidney).—An excellent first early, of good size, not quite so early as Mona's Pride, but of better quality and better flesh (a great consideration with some people), grown very extensively, I understand, in the Morecambe Bay district to supply the early markets of that neighbourhood. This has been the extent of my trial this year. My usual stock Potatoes are—For the very first crop a variety called "Fifty Dollars," a round good cropper (for an early variety), and fair on the table; Mona's Pride, a very good cropper, and good on some soils (not on all); Crystal Palace Kidney, a

descendant of the old Lapstone Kidney, bountiful but delicate; excellent on the table; Daintree's New Kidney, another descendant of the Lapstone, but without the Crystal Palace's bad habit of growing again when just ripe, and when showers come; delicate, unsurpassable as an eating Potato. The Albany Kidney, which used to be such a popular variety hereabouts, has nearly disappeared. Mona's Pride, Myatt's Ashleaf, and Rivers's Royal Ashleaf have driven it out of the field. It is early and good, but a small cropper, and nowadays we must have quantity as well as quality.—N.

KEW GARDENS.

The following extracts are taken from the Directors' Report on the progress and condition of these gardens during the year 1875:—The number of visitors to the Gardens exhibits a diminution compared with that of the two previous years; while there has been an increase of 34,621 visitors on week days, there has been a falling off of 56,045 visitors on Sundays, producing a net diminution of 21,424. On August 2 the Gardens were visited by 61,133 persons, the largest number which has been recorded for any one day. The whole of the collections of plants in tubs and pots in the centre and wings of the Palm house have been re-arranged, with the view of removing duplicates and overgrown plants, so as to give more space and light to other plants better worth cultivating. By this means the magnificent specimens of Cycads and Screw Pines, which were more or less concealed by less interesting plants in front of them, have been brought into greater prominence. The Palms in the four side compartments of the centre of the building are now arranged, as far as possible, geographically. During the ensuing spring further great changes will be necessitated, in consequence of many of the Palms which have been planted out in the beds having reached the full height attainable in their present position. These will have to be cut down, and others transplanted, or removed from tubs, to take their places. In the Report for 1871 it was stated that the boilers of the Palm house would not last much longer, and that when they did give way it would be advisable that a more economical apparatus should be introduced into the building. For this the time has now arrived; five of the existing boilers are from sixteen to seventeen years old, and are box-boilers of a very old-fashioned construction. The remaining six are "improved saddles," and have been put in during the last three years. Instead of replacing any more boilers as they give way, the whole heating arrangements should be put upon a different plan. In place of eleven boilers warming different sections of the house, four large saddle-boilers of the type now in use in large horticultural establishments would probably give a more satisfactory result. The separate systems of pipes would, in this case, need to be combined on the "universal flow and return" principle, an arrangement which would secure a much more uniform distribution of heat. The process of replanting and the attendant labour of clearing the young plantations in the arboretum (in the pleasure grounds) continue to absorb a great deal of labour. The more these grounds become transformed from their original forest features to those of lawn and park, the more attention do both old and young trees require. The crowds of visitors are now so great that it is no longer possible to leave the Grass unmown and allow the leaves to lie in autumn; the consequence is that the lawn Grass, overlying, as it does, a sterile soil, prevents the rain from penetrating further than its own roots, absorbs and exhales it in the heat of the day, depriving the subjacent root-feeders of the trees, whether young or old, of moisture. It has hence become necessary to keep the ground of plantations open and clear of weeds till the trees are fully established, and to remove the turf over the roots of trees that are planted singly. Meanwhile, many old trees die, and the proportion of these to those remaining of the original plantation increases annually. It has been found necessary to remove the noble row of old Elms that stood by the river-side at the back of the old palace wall. One of these having been blown down during the winter, it was found that it had no adequate roots, and was mainly supported in its erect position by about 5 ft. of ballast that had been used to raise the level of the road; an examination of the others showed that a very heavy gale might prostrate the whole and cause immense damage. It was, therefore, decided to remove them at once and replace them by younger trees. This has been done, and, in addition, a row parallel to them has been planted on the opposite side of the path. The rough ground between the Deodar avenue and the Richmond Road, in which was the old gravel-pit, was devoted to the collection of shrubby Polypetalæ (Thalamifloræ). Prior to its re-arrangement and extension, this portion of the pleasure grounds has been converted into an undulating depression, which, with its bounding and included eminences, occupies an area of about three acres. Beds 6 ft. wide and 500 yards in extent have been made in it, and filled with good soil for the collection of Clematis, Magnolia, Berberis, Cistus, Helianthemum, Hypericum, Hibiscus, and allied plants. The ground behind the beds has been trenched and dressed with rotten leaves for the reception of plantations of shrubs and trees. It is further intended to plant Evergreen Oaks, Cedars, and other ornamental trees in suitable positions on the undulations that skirt the area. The dead and dying trees have been removed from an area 100 yards in length skirting the boundary wall in the Richmond Road, and the ground levelled and trenched for replanting. This has been a most laborious operation, the roots of the Limes, Beeches, and Elms forming in the sandy soil, far below the surface, dense interlacements, which required to be cut through in every direction before they could be removed. On the opposite side of the path, between the Douglas Spar mound and Ruined Arch, beds have been made for the reception of the collection of Vitis, Rhamnus, Euonymus, Celastrus, and allied genera. As regards the interchange of plants and seeds, the receipts during the past year have been 7326 plants of all kinds, and 2811 packages of seeds from 233 contributors. The Liberian Coffee has been largely distributed, and has now been sent with uniform success (except in the case of Queensland and Grenada) to all the Coffee-growing countries, colonial or foreign, with which Kew is in correspondence. The Eucalyptus globulus, which has been so largely distributed on account of its supposed prophylactic virtues, will probably turn out to be extremely useful for its timber in countries not too hot for its growth. On the Neilgherries, where Australian trees have been largely introduced, one of the most valuable, the Acacia melanoxylon, proves to be all but valueless, owing to the ravages of various Loranthaceous parasites. The Eucalyptus globulus is, however, reported by Dr. Bidie to entirely escape their attacks. He attributes this immunity to the "deciduous bark, the seeds (of the parasite) thereby being dislodged before they can germinate and gain a hold." The production of different kinds of Caoutchouc in India continues to engage the attention of the India Office and of this establishment. One fact in connection with it, which seems to require very careful consideration, has been pointed out by Mr. Mann in his report on the Caoutchouc plantations in Assam. It is found that although the Ficus elastica will grow with undiminished rapidity and luxuriance in situations remote from the hills, it fails to yield Caoutchouc. Mr. Mann concludes that no greater mistake could be made than to start plantations of Ficus elastica in any part of Bengal. It appears, therefore, judging from this case, that conditions which may ensure the successful growth of Caoutchouc-yielding trees may not be sufficient to determine their producing Caoutchouc. The India-rubber of Para (Hevea brasiliensis) has already been introduced into India. It proves to be capable of easy propagation at Kew by cuttings.

GARDEN PARTIES.

The now favourite mode of entertaining large parties in private gardens, adopted even by Royalty, would appear to be but of recent origin in England. In the "Pictorial Calendar of the Seasons," Mary Howitt says:—"Speaking of the garden at North End House, Twickenham, we are reminded of the social enjoyment which it is made to furnish in the season of its Roses, when Mr. Bohn's numerous friends assemble at a floral fête. Taking such an entertainment as a type of what a garden party should be, we would recommend beautiful flower gardens to all the fortunate possessors of them as the most noble reception-rooms for even hundreds of guests, who amid the beauties of the summer garden, and in the open air, appear to great advantage, and physically and mentally are brought into harmony with the scene. Such fêtes are refreshing and exhilarating, and might be advantageously introduced among persons of moderate fortune, who, in well-kept and pleasant gardens, might entertain their friends without any extraordinary expense, much more agreeably than within their houses, where the rooms are often small, and, especially in the summer season, unfit for the accommodation of numerous guests." I have had the pleasure of being present at one of Mr. Bohn's recent garden fêtes, for which his grounds are so admirably adapted, and I can heartily confirm Mary Howitt's emphatic praise of them, and I can join in her recommendation, which, however, has been too extensively followed to be longer needed. Mr. Bohn originally acquired a taste for garden parties in Germany, where, in his early years, he used to be invited to them, both in summer and in autumn, and especially to a Rose garden fête in the neighbourhood of Leipzig. He gave his first fête in June, 1852, and has since repeated it annually, but now, instead of standing all but alone as he used to do, he finds it scarcely possible to hit upon a day on which he has not several competitors within his own immediate circle. With reference, however, to the previous absence of garden fêtes, it has to be borne in mind that five-and-twenty years ago the floral suburbs of London had not become so readily accessible by rail as they now are; and the uncertainty of the English climate was an unfailing drawback to out-door attractions, as the old Horticultural Society at their Chiswick Shows had reason to deplore. But of late years tents of all kinds are so amply provided by the Edgingtons and others, that little apprehension is now entertained in respect to the weather. H.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

On Tuesday last a meeting of the holders of the debentures of this Society was held in the Council room, South Kensington, "to receive a statement from the president as to the financial position of the Society." Lord Aberdare, the president, said the meeting had been called in order to put the debenture holders in a position to judge, at the earliest possible moment, of the state of affairs. The sum advanced by the debenture holders, under the agreement entered into between the Royal Commissioners of the Exhibition of 1851 and the Royal Horticultural Society, was £50,000, bearing interest at £5 per cent., which was secured—so far as such an expression might be used—out of the receipts of the Society, after fully providing for maintaining the gardens in sufficient repair for their shows, and for all necessary and proper expenses of the Society. As for the capital, its repayment was provided for as follows:—After paying necessary repairs and expenses, the debenture interest, and the rent of the gardens to the Commissioners—£2145 a year—they were bound to set aside three-fifths of any remaining receipts towards the capital debt. The lease granted by the Commissioners began in 1861, and would terminate in 1892. If the Society fulfilled all the conditions of the lease, and the Commissioners declined to renew it, the latter were bound to pay half of the debenture debt. Unfortunately, he was unable to hold out any prospect of repaying the capital from either of these sources. No sum applicable to repayment of capital had ever been realised out of the receipts by the Society, except in two years, when the sum of £300 was so applied. As to other sources of repayment, he was unable to hold out to them any hope that the conditions of the lease would be so fulfilled as to put the debenture holders in a position to claim half of their capital from the Commissioners. Some discussion followed the president's address, and Mr. G. Reay proposed the appointment of a committee of debenture holders for the purpose of protecting their interests and entering into communication with the Council of the Society and the Commissioners of 1851 for that purpose. Dr. Martyn seconded the resolution, which was carried. General Mackinnon then moved the following resolution:—"That the committee consist of seven members, viz., Mr. G. Reay, Dr. Martyn, and Mr. T. N. Doughty, who shall have power to choose the remaining four members." The resolution was carried, and the proceedings then closed in the usual manner.

Ordinary Meeting, August 3.

At this meeting, though a small one, several interesting novelties were exhibited, and here let us remark that although the Society should be driven to take up its abode wholly at Chiswick—a thing at present not improbable—let us hope that these interesting and instructive meetings may not be discontinued. Among the plants shown on this occasion the following First Class Certificates were awarded:—

Begonia, Davisi (Veitch).—This is a dwarf-growing species, and one which is likely soon to become popular as a decorative plant. Its leaves are cordate, of a pale or bluish-green colour, and hairy on both surfaces. The flowers are borne in threes at the apex of a crimson scape, 3 in. to 8 in. in height, and the flowers themselves measure about 2 in. across, and are of a vivid orange-scarlet colour. The female flowers are rather smaller than the male flowers, but are equally vivid in colour. Although one of the smallest of all Begonias, this well deserves culture as one of the best of them.

Greenhouse Rhododendron, Maiden's Blush (Veitch).—This is a very beautiful variety of the R. javanico-jasminiflorum group, and bears soft blush or rosy flowers flushed with lemon-yellow in the throat. The flowers are borne in clusters at the apices of the branches, surrounded by bright green glossy leaves. It is a most desirable decorative plant.

Bourbon Rose, Queen of Bedders (Noble).—This is a vigorous and dense-habited, free-flowering variety, raised by Mr. C. Noble, of Sunningdale, from seed of Sir Joseph Paxton. It bears full, vivid crimson flowers in dense, terminal clusters, and will be of great value as a bedding Rose, or for planting in shrubbery borders, or wherever space can be spared for it.

Godetia, Lady Albemarle (Daniels).—This is a very effective, dwarf, free-flowering plant, raised by Messrs. Daniels Brothers, of Norwich. It is a hardy annual which grows from 9 in. to 15 in. in height, and bears glowing carmine flowers shot with lilac; as a pot plant it is most effective. It is said to be a seedling of the fourth generation from G. Whitneyi, crossed with the pollen of G. Lindleyana; but it is far superior to either of its parents as a summer-flowering, decorative plant.

Hollyhock, Virgin Queen (Chater).—A full, creamy-white flower, rather rough in outline, but well worth a place as a distinct variety. Now that the virulent disease which attacked Hollyhocks seems in a measure to have been "stamped out," let us hope that these stately flowers may again become popular.

Double-white Zonal Pelargonium, Madame A. Baltet (Lemoine).—A very good and distinct variety, having pale green leaves and nearly pure white double flowers, borne in compact trusses well above the foliage. It is one of the best sent, amongst others, by M. Lemoine to Chiswick for trial.

Nectarine, Welbeck Seedling (Tillery).—This is a very useful and distinct fruit, raised at Welbeck by Mr. Tillery. It is of average size, and is highly coloured, the flavour being rich and juicy, like that of the Elruge, which it most nearly resembles. It is a well-tried variety, and one which deserves a place in all gardens where Nectarines are grown.

Miscellaneous Plants.—Messrs. F. & A. Smith, of Dulwich, sent a collection of double-flowered Balsams, sturdy-habited plants about 18 in. in height, the central stem being perfectly wreathed with flowers. The prevailing colours were puce, purple, salmon, rose, white, crimson, and scarlet. These plants had apparently been lifted from the open ground. Mr. W. H. Michael, of Cholmeley Park, Highgate, showed a collection of Tydæas and Gloxinias in excellent condition, and a plant of the old long-tubed Dolichodeira (Gloxinia) tubiflora came from the Society's garden at Chiswick, together with well-grown specimens of Cissus discolor and Hydrangea japonica variegata. Mr. Osman, of the Sutton Metropolitan Schools, contributed a seedling Gloxinia named Empress of India, a kind which has large and shapely white flowers, with a crimson throat. Mr. G. E. Elliot, Bradford Street, Huddersfield, furnished two dwarf well-grown crimson Cockscombs, to which a cultural commendation was awarded. Mr. R. Dean exhibited several dwarf, free-flowering—Blue Lobelias, and a box of bright, well-formed Balsam flowers. Mr. Ernest Benary, of Erfurt, contributed a dwarf pyramidal stock named Blue Celeste, a kind not so effective as Mauve Queen. A collection of double Zonal Pelargoniums came from Mr. H. Cannell, of the Nurseries, Swanley, Kent; among these Meteor Flag (Turner), scarlet; Konig Albert; (Lcibmann), mauve; ivy-leaf M. Buckler (Lemoine), crimson nosegay; Figaro (Lemoine), bright salmon; and Amelia Baltet (Lemoine), white; were the best. The sweet-scented hardy white-flowered Olearia Haastii, alluded to at page 125, came from Messrs. Veitch and Sons. Mr. W. Chater, of the Nurseries, Saffron Walden, sent two attractive stands of double Hollyhocks. Among the varieties which they contained were—Pink Queen, a delicate rosy variety of good form; Vesuvius, crimson; Sunset, rosy salmon; Sultan, dark mulberry-purple; Her Majesty, bright salmon-rose; Supreme, blush; Peri, sulphur-white; Ianthe, carmine; King, bright salmon; Champion, dark red; and La Grande, delicate rose. Mr. J. S. Maw showed two well-grown specimens of tuberous-rooted Begonias, namely, Rosalind, a delicate rosy form; and Ophelia, a white variety, flushed with rosy salmon. Mr. Tomkins, nurseryman, Shard Hill, Birmingham, furnished two plants of the double salmon-flowered, golden-leaved, tricolor Pelargonium Miss Ryland, and also a plant of the same which had reverted to a green-leaved dark-zoned state.

Fruit and Vegetables.—Mr. Tillery, of Welbeck, sent, in addition to specimens of the Welbeck Seedling Nectarine, Early Grosse Mignonne Peaches in excellent condition, from a glass-covered, unheated wall. Mr. Edmund Bland, Cranbourne Court, furnished two dishes of Victoria or Elruge Nectarines, also three good clusters of Black Hamburgh Grapes. A dish of very fine Red Currants came from the Society's Garden at Chiswick, the clusters of fruit being fully 4 in. in length. Mr. D. D. Hughes, Kinmel Gardens, Abergele, N. Wales, sent a green-fleshed seedling Melon of excellent flavour. Mr. Gilbert, of Burghley, showed three dishes of Tomatoes, the best of which were excellent specimens of Jackson's, a full, heavy, and highly-coloured fruit.

NOTES AND QUESTIONS—VARIOUS.

Buddleia intermedia.—The beautiful hybrid, Buddleia intermedia, a cross between B. curviflora and B. Lindleyana, is now showing bloom with me for the first time. It seems to be of extremely quick growth and vigorous habit, and is also said to be very free-blooming; it is well figured in the number of the "Revue Horticole" for April 16, 1873, and is a shrub worthy of being included in any collection. I have also a new Escallonia, named stenopetala alba, now showing bloom for the first time.—W. E. Gumbleton.

Nomenclature of Trees.—Mr. Barron, whose name is closely associated with evergreens, says that "in England we have been taught that the best name is one somewhat descriptive of the plant." In America we hold that the best name is the one which was given with the first description in a botanical work, and we leave to the one authorised to name it all consideration regarding the fitness of things. By following this law of priority we avoid all wrangling about the proper name.—T. Meehan.

Skimmia japonica on a North Wall.—When in good health, few berry-bearing plants are more ornamental than this, but it is seldom met with in very free growth or well-berried. A few years ago I had occasion to move a plant of it from off a south wall, where it looked yellowish and sickly. It was planted on a north wall, which the sun never reaches, except for a short time in the evenings at midsummer. Here it has improved wonderfully in general health, is continually loaded with large brilliant clusters of berries, the crop of two years being in perfection at the same time. Evidently this shrub, like the Camellia, thrives best out of the reach of bright sun, and in a cool, moist position.—"The Gardener."

Variability of the Spruce Fir.—With the exception, perhaps, of the Thorn Acacia, the common Spruce Fir presents a greater range of variation than any other tree we ("Gardeners' Chronicle") can call to mind, from a dwarf, dense bush to a lofty tree. At a late meeting of the Berlin Botanical Society Mr. Braun exhibited and described a series of cones of wild forms of states of the Spruce found in Germany. Just below the upper tree limit of the Brocken a dwarf variety, 8 to 10 ft. high, grows and bears cones 1½ to 2 in. long, not unlike those of Picea nigra. The longest, on the other hand, in this collection are from 7½ to 8 in. There is also an equal diversity in the length of the leaves, but this exists in no definite relation to the length of the cones. The seeds vary from about forty to fifty-eight in the smallest cones, to about ·75 of an inch in the largest cones.

No. 247.] SATURDAY, AUGUST 12, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

MR. OLMSTED ON LANDSCAPE GARDENING.

TO THE EDITOR OF "THE GARDEN."—I am gratified to have the good opinion which led you to think me the author of an article in the "Gardeners' Monthly," quoted in THE GARDEN of July 1, and which you pleasantly make the occasion for showing how you and I, from our different points of view, may observe a subject of common interest. You rightly assume that I have been placed by circumstances in a position to regard the relation between the professions of landscape gardening and architecture with more than usual interest. I must confess, however, that as far as this relation has a bearing on the question of professional education, I yet stand a little too much in a waiting and enquiring attitude to write upon it with satisfaction. Still if you care to know my view of the subject, you are entitled to have an authentic report of it, and so far as I can give you this, I will do so with pleasure. It has long been a practice to introduce temples, pagodas, pavilions, "ruins," bridges, arches, obelisks, and other monuments, in works of landscape gardening, not alone where they were required by considerations of health and convenience, but with a view to give interest, character, and finish to the scenes in which they appear. In the war on this practice which you are leading, I claim to be with you. With, perhaps, a single justifiable exception, no architectural object has ever yet been introduced in any work of landscape gardening with my consent which was not first devised with a view to some other purpose than of display or effect in the landscape. But what are the grounds of objection to the practice? To find and substantiate them, I think it is necessary to see, more clearly than most intelligent men seem ready to do, in what the essence of landscape gardening consists. Loudon, after making an extended study of the manner in which the term is used by a series of authors, says (§ 7181, Ency. of Gard.) of a simple example:—"All the parts unite in forming a whole which the eye can comprehend at once and examine without distraction. Were this principle not prevalent, the groups of trees, the lake, and the building would only please when considered separately, and the result would be as poor a production as a machine, the wheels of which are accurately finished and nicely polished, but which do not act in concert so as to effect the intended movement."

The objection, then, to monumental and architectural objects in works of landscape gardening is this, that, as a rule, they are not adapted to contribute to any concerted effect, but are likely to demand attention to themselves in particular, distracting the mind from the contemplation of the landscape as such, and disturbing its suggestions to the imagination. But the object of producing an effect on the imagination being to make the life of man more agreeable, war on architectural objects may be carried too far whenever the objects which it removes are likely to add more to the satisfaction of life than they deducted from it by their injury to the landscape. Where the number or extent of artificial objects thus called for is large as compared with the ground to be operated upon, landscape gardening, properly speaking, is out of place; gardening material should then be made to support, strengthen, and aggrandise architectural design. But there are intermediate cases where the landscape gardener, as such, will neither retire from the field nor refuse to yield anything of landscape effect to convenience. If, in laying out a ground which is to be used by a hundred thousand people of all classes, we seek to have no more numerous or more substantial artificial structures than we should if it were to be used only by a quiet, private family and its guests, we shall overreach ourselves. It is better that the ultimate special requirements of the situation should be foreseen from the outset, that provisions for them should be ample, that the necessary structures, however inconspicuously they may be placed, should be substantial, and their real character not only undisguised but artistically manifested, and that, finally, they should become as far as possible (preserving the above conditions) modest, harmonious, and consistent elements of a general landscape design, in which no more ambitious landscape motives are to be admitted than will allow them to be so assimilated. In such cases it is obvious that the architect would work with reference to the same general idea as the gardener, and should take pride and pleasure in subordinating his art to it. It follows that no architect is perfectly fit for the duty who can not enter heartily into the spirit of a general design embodying landscape considerations; considerations, for example, of the modelling of ground-surface and of the disposition of foliage, as to density and colour and shade and sky-line. It is to be said that architects are often shamefully ignorant in this respect, and I have no doubt that they are sometimes somewhat conceited and presumptuous in their ignorance. But we do not, as a rule, find that men trained as shoemakers have a propensity to chequer their hats with leather, nor men trained as hatters to slash their boots with felt; and I do not believe that it is a necessary result of properly educating an architect that he should be irresistibly disposed to patch a lawn with bricks and mortar. Whenever such a mania manifests itself, we may be sure it signifies too crude, not too refined a professional training.

But our present business is rather with the question of the education of landscape gardeners than of architects. Let me ask then, if it be a just cause of reproach to an architect that he cannot comprehend, and therefore cannot avoid overdoing his proper part in a landscape design, whether it is not equally true that the landscape gardener, who cannot upon occasion work hand-in-hand with the architect cheerfully, loyally, and with fore-reaching sympathy, is unqualified for his duty? Practical occasion for this close alliance of the two professions is not uncommon; indeed, in the greater number of cases where either is called in, there is to be a building or group of buildings, the site, aspect, elevation and outline of which cannot be properly determined without an understanding as to how the adjoining grounds are to be managed; as to where an approach is to be laid, as to where trees are to close the view and lawns open it, as to where the surface is to be gentle and quiet, and as to where it is to be abrupt, broken, and picturesque. On the other hand, it is equally impossible to properly design the walks and drives, the slopes, lawns and foliage, without regard to the position, the height, the breadth, the openings, the sky-lines, and even the decorative details of the buildings. There is then, properly, no distinctive field of general design for each profession; there is only a distinctive field of operations under the general design, the landscape gardener being responsible in the outlying parts of that of which the special field of the architect is the centre. The house comes first, because shelter is the first necessity, and it is only with increasing wealth and refinement that the garden part grows out of it. In the familiar aphorism of Lord Bacon, the art of pleasure-gardening is thus regarded as a higher development of the art of architecture; and, in fact, if we look to the origin of the word we shall find that an art worker in soils and living plants is as accurately an architect as one who is confined to brick and mortar. But you suggest that if the landscape gardener interests himself in architecture and other fine arts, it will be likely to overmuch distract his mind from another class of interests which, if not essentially, are yet closely connected with landscape gardening, such, for example, as those of tropical botany and exotic horticulture. The range of study which is called for in these is already so greatly extended that simply to call by name the various plants that are to be found under glass in England, a man must have gone through an amount of special mental discipline which would have been appalling to a gardener of fifty years ago. And yet this range is rapidly enlarging, and no one can guess where it will end. If, then, a young man, in addition to the study necessary to the practice of landscape gardening pure and simple, is to make himself master of tropical botany and exotic horticulture, and a perfect adept in all other branches of botany, I question if there will not come in time another danger to the art of more gravity than that which I am disposed to apprehend exists in its disalliance with architecture.

To recognise what I mean, please ask yourself what is the one sure product which any professional education in landscape gardening must be adapted to cultivate? It surely is that of a special sensibility to the characteristic charms of broad, simple, quiet landscape compositions, united with a power of analysing these charms, and of conceiving how they may be reproduced through other compositions adapted to different topographical circumstances and different requirements of convenience; and this united again with a power of organising and directing means through which, after many years, these conceptions may be realised. In order to acquire such a wide range of information and of skill as will before long evidently be required of a gardener professing to be equipped at all points, a man of ordinary abilities must begin young, and must for some years be thoroughly absorbed in his work. This cannot occur without a strong tendency to establish a propensity to regard trees and plants from mental points of view quite different from those in which alone they are seen in landscape gardening; that is to say, quite different from points of view in which the special qualities of each are to be of interest only as they favourably affect broad harmonies of landscape. It appears to me that the likeness of the materials and processes of botanical and exotic gardening to those of landscape gardening, instead of being an advantage in this respect, really establishes an insidious danger greater than that which you apprehend from an interest in an art dealing with such different materials and processes as that of architecture. It is a matter of history that the revolution in which landscape gardening originated was practically led more than by any other man by one (his monument should be in Westminster Abbey) who was educated as a coach painter, grew from that to be an historical painter, from that again wandered as a student of the fine arts in general into Italy, and finally on his return started in business as an architect before making his first imperfect essay in landscape gardening. How we should now rank his more mature work, and that of his contemporaries, few of whom were gardeners bred from youth, is an interesting question, for the profitable study of which there may yet be opportunity in England. How we should rank it as an arboretum, how we should rank it with regard to brilliancy of colouring, how as a living museum of botany, how as an exhibition of the fashionable plants of the day, there can be no doubt; but I mean what should we think of it as a work of art? what would be its influence on the imagination? We know that in its day it compelled the unbounded admiration of the most cultivated people, not only of England but of all Europe, and we may presume that if it lacked the incident and varied interest of modern work, it was not without some impressive poetical qualities. We may be sure, I think, that the profession of landscape gardening has not since been gaining as steadily in power to affect the imagination as it has gained in working material and in science. It is possible that it has lost something; and if so, I should judge from descriptions, and from a few old engravings, that it was in the qualities of breadth, consistency of expression, subordination of all materials used to a general ideal simplicity, tranquillity, and repose. I do not want to give undue importance to this suggestion, but it is obvious that defects with reference to these qualities are precisely what should be expected to result from an overlong absorption of mind in questions of classification and nomenclature, from an excess of interest in conservatory, winter garden, terrace garden, and bedding-out effects, and from the resulting necessity of a forced retreat from the border grounds of allied arts and professions.

My *alter ego*, if you please, of the "Gardeners' Monthly" apparently regards the title of landscape architect as one in which an assumption of superiority is affected toward those who beforetime have been called landscape gardeners. I do not see the assumption, but to remove the suspicion, however it arises, in at least one case, I will mention that the word architect, as applied to the manager of a public work, of which landscape gardening should be the chief element, was here in America adopted directly from the French, and was first fastened upon the occupant of such an office, who was not an architect in the English usage of the term, in disregard of his repeated remonstrances. As it is not wholly without an etymological propriety, as it has a certain special value in addressing a public which, in my humble judgment, is too much rather than too little inclined to regard landscape considerations as one thing and architectural considerations as quite another, and as it has now been fairly accepted as an intelligible term on this side of the water, I will submit to whatever reproach must follow on the other in subscribing myself, in all goodwill,

Frederick Law Olmsted, Landscape Architect.

New York.

ARE HYBRIDS STERILE OR NOT?

I ought before now to have thanked "B." and Mr. Max Leichtlin (see p. 76) for their kindly criticism of my remarks (see p. 67), and for the valuable information which they have both given upon this interesting subject. It will be remembered that in my letter at page 67, I said:—"As far as my own experience goes, I have always found it to be impossible to induce a hybrid to form a union with any other plant, &c." Now, this was true enough as regarded my own experience in the matter, which has not been very great, and I am now glad to be made aware that hybrids are not always sterile. I was of course aware when I penned my remarks (see p. 67) of the hybrid or cross-bred origin of our modern Zonal Pelargoniums and other families of plants; but as regards some of them, and more particularly as regards the Pelargonium, I entertained some misgivings as to whether P. zonale and P. inquinans could justly be considered as distinct species, or as merely distinct varieties of the same species. I have just received a letter from M. Jean Sisley, of Lyons, wherein he also calls in question my statement at page 67, and, having his permission to do so, I will give a few extracts from his letter. "You say as far as my experience goes, I have always found it to be impossible to induce a hybrid to form a union with any other plant, sterility appearing to be the unvarying accompaniment of hybridity; but although this theory has been constantly put forth by botanists, I have never been disposed to accept it as a rule, because I believe with Darwin that all living beings are more or less hybrids, and that if they appear not to be disposed to follow the regular course of reproduction, it is because Nature is not so anxious as we are to reproduce and perpetuate certain forms. If sterility be a check to our impatience, I do not admit it to be absolute; and if we studied more attentively we would find that we have not hit on the proper subject for the union which is necessary for reproduction. I have had proof that hybrids are not completely sterile; last year I tried an immense number of crosses between different species of the Geraniaceæ (or what are called so), and I have generally failed; but I have now an offspring from Pelargonium peltatum Willsi roseum fertilised by a double Zonal. This plant is dwarf, the leaves somewhat like those of Zonals, but very thick, having a feel like that of leather; the flowers are single, very light rose, the upper petals striped with a darker shade. Out of perhaps a hundred attempts I have obtained but one seed, so that I suppose the double Zonal was the only male which suited that hybrid. The question is, then, to find the proper male." After detailing many experiments with their various results, many of them very remarkable, M. Sisley again says:—"Although we know very little of the laws of Nature, yet, as far as my experience goes, I find that sterility is not the rule as regards hybridity." I may be allowed to add that the purport of my letter at p. 67 was principally to condemn the use of superfluous and absurd botanical or other terms, which tend to mystify and discourage the study of subjects otherwise simple and interesting in themselves. Why should we not call things by their proper names when it is quite as easy to do so as it is to do the reverse? As an illustration, why do our otherwise intelligent nurserymen in their catalogues and advertisements persist in calling Pelargoniums Geraniums, when they know this to be incorrect? I am pleased to find that "B." agrees with me as regards the application of the terms hybrid and cross. And I should be glad if this little discussion should tend in any degree to lead to a more correct and generally understood application of these as well as of other terms used in reference to hybridity.

Culford, Bury St. Edmunds. P. Grieve.

NOTES OF THE WEEK.

Tyerman's Groundsel (Senecio pulcher).—"Oxon" writes to us concerning this plant recently figured in The Garden:—"This brilliant plant is now in bloom with me. It is 2 ft. in height; the magenta-crimson flowers are 3 in. across, and have yellow centres."

Labelling in Hyde Park.—A very good system of labelling is now in use in Hyde Park, the names being clearly written, and the use of numbers being almost entirely done away with. We now refer to the labels for flowers which are T-shaped, and of a good pattern. These are quite large enough for shrubs, and might well replace the huge labels used for shrubs in Kensington Gardens. All labels for trees with a bole should be affixed to the tree at about the height of the eye, and should never be placed in the ground.

Gift of a Park.—Lord Dartmouth has presented to the town of West Bromwich 50 acres of land at Cooper's Hill for a public park. The gift was announced recently at a meeting of the West Bromwich Improvement Commissioners, and a vote of thanks to his lordship was passed.

The Lime Tree in London Parks.—In many parts of the London parks the ground is covered with the leaves fallen from the Lime tree. This is no unusual occurrence at this time of year, and, indeed, it may often be observed in July; but this year, in consequence of the drought, we notice the leaves falling as if autumn had come in parts of the parks where the trees used to retain their leaves till late in the year. The Lime is the least suitable of all trees for towns.

Fruit for the Philadelphia International Exhibition.—The pomological display in connection with this Exhibition will take place from September 11th to September 16th, in a special annexe to the Agricultural Hall. Tables and dishes will be provided free of charge, and the contributions will also be received, unpacked, and labelled by the department. The display will consist of sixteen classes, from No. 881 to No. 896. No. 881, Summer Apples; 882, Autumn Apples; 883, Winter Apples; 884, Summer Pears; 885, Autumn Pears; 886, Winter Pears; 887, Freestone Peaches; 888, Clingstone Peaches; 889, Apricots; 890, Nectarines; 891, Plums; 892, Native Grapes; 893, Foreign Grapes; 894, Water Melons; 895, Citron Melons; 896, Tropical Plants. Intending exhibitors should apply without delay to the offices of the British Executive, 5 Craig's Court, Charing Cross.

Long-tubed Lily (Lilium neilgherrense).—Mr. Barr writes to us as follows respecting this Lily:—I send you a flower of this Lily, from which you will see what a grand variety it is. In my experience I have never seen anything so fine in the longiflorum group, and, judging from appearances, I should say that it will be hardy. It is a free and robust grower. I am informed by my Indian correspondent that it produces from five to seven flowers on a stem, and that it varies in colour from pure white to pale yellow, and that sometimes even it has a tinge of pink in it. Considering that the bulbs were imported last January, and were potted several in a pot for the sake of preservation more than for growth, it may be fairly assumed that the flower will attain larger dimensions than the one sent. I may mention that it is of a freer growth than any of the longiflorum group which I possess. As a conservatory Lily it is matchless. It is remarkable that so fine a Lily was not introduced long ago; until this year it is doubtful if it has been flowered half-a-dozen times even in Europe. I did not measure the flower sent to you, but the same day I cut one which measured 9 in. I may add that it possesses an agreeable fragrance.

The Potato Crop.—In London markets Potatoes are fetching nearly double the price realised at this time last year, even though there be not the slightest evidence of disease. This comparative dearness arises entirely from the deficiency of the crop, the result of the summer's drought. All the first and second early kinds are as a rule small, and although in some favoured soils and localities where, perhaps, rain is rather an evil than otherwise, the crop is good, yet this exception is a very limited one. In the large gardens and Potato fields surrounding the metropolis the crop is comparatively small, but the greatly increased price somewhat recoups the grower, the consumer being the sufferer. The price is still farther enhanced by the appearance of the late crops, which although vigorous enough in the haulm are fast growing out in such a way as to denote a very partial and inferior crop. The heaviest crops are generally lifted in seasons notable for the destructiveness of the disease, but then with size, even the smallest are capable of utilisation. This year, however, the smallest form a large proportion of the whole, and they are so small as to be almost valueless. There is too much reason to fear that rains would now but add to the "growing out" rather than to the quality of the crop.—A. D.

The Hail-storm Relief Fund.—This is now organised, and an appeal for assistance is in course of being made to the trade and to charitably-disposed persons unconnected with it. Among the contributors are:—Messrs. Hurst and Son, and Messrs. Veitch and Sons, for £25 each; Mr. John Fraser and Mr. William Bull, ten guineas each; and Messrs. Nutting and Sons, Jno. Wills, P. and S. Kay, B. S. Williams, E. G. Henderson and Son, H. Stroud, T. S. Ware, R. Oubridge, H. Low and Co., John Turtle, James Sweet, John Maller, W. E. Gumbleton, and others subscribe five guineas each; there are, too, many subscribers of two guineas, as well as of smaller sums. How thoroughly destructive in its action the storm proved may be imagined from the following statement of damage sustained by one of the sufferers: "One 100-ft. span house, 15 ft. wide, nearly all the glass destroyed; one 50-ft. house, 15 ft. wide, nearly all destroyed; one 24-ft. house, 14 ft. wide, roof and part of back destroyed; one 30-ft. house by 12 ft. partly destroyed and a quantity of pit lights more or less destroyed, and for the present rendered perfectly useless; all which damage I estimate at not less than £60.' Equally sad examples might be multiplied, and it is of the highest importance that pecuniary assistance be given as soon as possible, in order that the repairs may be carried out while the fine weather lasts, and further, in sufficient time to admit of the summer propagation being gone on with. Mr. Richard Dean, Ranelagh Road, Ealing, secretary to the fund, will be happy to receive subscriptions towards it. It is computed that the sum of £4000 will be required to meet the many urgent requests for relief sent in to the committee.

Mentzelia Ornata.—The Bank Holiday (August 7) is marked as a red-letter day in my floral records by the expansion in the evening of the first flower of this beautiful plant. Raised in 1875 from seed, the young plants were wintered in a cool greenhouse, from which frost was barely excluded, and turned out after a preliminary shift in May. The plant which has just commenced flowering is about 3 ft. high, with thirteen stout branches rising nearly to a level with the central stem, all bearing several flower-buds at the extremity, and numerous undeveloped laterals. The noble flower which has just developed itself expanded about 6.30 p.m., and was fully 5½ in. in diameter, with ten spathulate petals of a creamy white, the alternate five being slightly smaller than the others. The centre of the flower is completely filled by a forest of stamens, which are nearly as long as the petals, and by their number and yellow colour produce a striking effect. To judge by the appearance of the plant the flower-buds will continue to develop themselves for at least two months to come. The cultivation of this fine species presents no difficulty, if I except the earliest stages of growth, during which care is requisite to prevent damping off, the seedlings being somewhat succulent in their character, and the period of transplantation from the seed pot is also rather a critical one; but where the young plants have been well established singly I have not found that they require any further attention beyond the usual routine. It is no doubt a true biennial, but that should be no objection among the cultivators of Humea elegans, Canterbury Bells, and other well-known plants of the same class. I must not omit to add that the blossoms of the Mentzelia ornata emit a slight fragrance, but it is neither so pronounced nor so agreeable as I had been led to suppose. At the moment of penning these few lines the flower, after remaining closed throughout the day, has just opened for the second time. It may not be amiss to mention that the so-called Bartonia aurea is properly Mentzelia Lindleyi.—W. Thompson, *Ipswich.*

Lapageria from Cuttings.—M. Bausé, the manager of Mr. Wills' Nursery, at Anerley, has been very successful in raising Lapagerias from cuttings, a fact which it is very useful to know in the case of the yet rare white variety (L. r. albiflora). They are put in about the month of October, and are made from well-ripened wood, each cutting having either one or two leaves, and they are then put in 48-sized pots, about twelve in a pot. A sandy soil, made up of peat and loam, the former in good proportion, is used, and when filled the pots are put by in a shady place, and no heat is required to assist the cuttings to strike. They commence to root about the following May, and by October following they have made shoots 4 in. or so in length, and are well established. Then they are potted off, and grown on into size. The Lapageria can also be propagated by layers in the same way as Carnations; and, in the case of good plants with several shoots, a number of them can be layered at a time; they root in about nine months. Large plants are much more quickly made by layers, but the advantage of propagating by cuttings is, that a greater number of plants can be obtained.—"Florist."

Althæa Frolowiana.—This showy Hollyhock is now in full bloom with me, and its tall stems, covered with large parti-coloured orange, or yellow and red flowers, render it a most desirable plant at the back of a mixed border.—H. Harpur Crewe, *Drayton-Beauchamp Rectory, Tring.*

COTTAGE GARDENING.

By E. HOBDAY.

There are degrees in cottage gardens and gardeners as in other things. The town artisan, with his small holding in the suburbs, with perhaps his frame or his little greenhouse probably of his own construction, is of a more ambitious turn of mind, with higher aims than those of his rural brother. The latter directs his main attention—to use his own words—to growing material for the pot, whilst the flower borders by the cottage door are usually under the care of the wife, and in a family where all must be workers this division of labour gives all an equal interest in the garden, and adds to the pleasure derived from it. The small tradesman and the town artisan, without altogether neglecting vegetable culture, give up much of their leisure time to flowers. None but those who have mixed with them on friendly terms can tell how much this love of flowers influences their lives for good, and how vast an amount of genuine pleasure is derived from their culture. Great sacrifices are often made in order to procure some new variety of any favourite class of plants, and the pleasure felt in the possession of any plants new and rare, is perhaps, greater than that experienced by the wealthy proprietor of numerous hothouses. I have had many opportunities of intercourse with cottage gardeners in various places, both in town and country, but I never yet knew one who truly loved his garden who frequented public-houses. The two are altogether antagonistic. When a man takes up with one he loses all taste for the other. Clergymen and others who have influence with the wealthy classes, and who desire to benefit their poorer neighbours, might do much to foster and stimulate a love for gardening. I know something of the longings of working men without gardens for a bit of land to cultivate in their leisure hours, and in this direction much good might be done. It has been said to give a man a garden to cultivate at home tends to reduce his strength, and makes him a less efficient labourer; but I have invariably found that the man who possessed the neatest cottage, and who cultivated his garden best, was also the best and most trustworthy workman. It is the indolent, careless man—the man, in fact, who neglects his home duties, who requires the master's eye to be upon him in order to keep him at work. The aim of all wise and good men is to make the working man self-reliant and self-respecting; and although the mere fact of a man having a comfortable cottage and a good garden may not in all cases make him wiser or better, yet their possession is a great incentive to good conduct, leading to thrift and respectability. I am not an advocate for a large garden for working men; a man in good health who does not walk more than a mile to his daily work may be able to manage profitably a quarter of an acre, but that should be the maximum size; and many holdings, of course, should be much smaller. I would rather see a small garden or a small farm well cropped and cultivated than see a man taxed beyond his strength, in the one case, or his capital in the other, his health and temper being worn out in fruitless efforts to keep pace with the work. For the sake of clearness and brevity, it will be convenient to divide my subject into three sections, as follows, viz.:—Flowers (including window plants), Fruits, and Vegetables. In the proper place I shall also refer to the management of the greenhouse and garden frame or pit, as glass in some shape or other is becoming quite common in the better class of cottagers' gardens.

Flowers.

Flowers may not—as an old labourer said to me one day—make the pot boil; but, nevertheless, they are, as I have said, the source of much genuine pleasure. There is an innate love for flowers in the human heart; it is first seen in the little child amongst the Daisies and Buttercups, and even the most callous and indifferent are not insensible to their influences. Those who have it in their power to make presents of flowers, especially among the sick, are not likely to forget the emotion that brightens the eye and flushes the pale cheek of the invalid when receiving a present of flowers. As cottages are not usually situated in a swamp, and from their small size are ordinarily surrounded by a hedge and ditch, artificial drainage, so far as the gardens are concerned, is hardly necessary. There may of course be exceptions to this rule like all others, and where drainage is really necessary it should be the first thing thought of. I am not in favour of shallow drains where the spade is freely used and where fruit trees and, indeed, trees of any kind, are growing near. The roots of trees have a natural aptitude for running down to the drains for moisture, and in the course of a few years the drains will probably be choked and rendered useless by their fibrous growth. The depth of the drain should never be less than 3 ft., but I should prefer a depth of 4 ft. if a good outfall could be obtained. Fencing and draining, however, are proper matters for the consideration of the owner of the property, and in the majority of instances are carried out at his expense. In laying out cottage gardens, there is ample room for the display of both taste and judgment. Small cottage gardens should not be unnecessarily cut up with paths, for they take up ground which might otherwise be made use of to great advantage; at the same time, there must be free access for the convenience of cultivation, and one-half the pleasure of a garden is destroyed if a man or his family cannot walk in it in all weathers. Next to a wall a good Whitethorn hedge forms the best boundary fence, and as regards shelter it is even superior to a wall. When the bottom is kept free from weeds, and the top neatly clipped, it gives an air of tidiness to the garden, and is usually indicative of good culture on the part of the occupier.

The cottagers' flower borders are often of a heterogeneous character, some of the plants being dwarf and some tall. Probably the tall plants are growing over the path, quite hiding the dwarfer blooms at the back. My object is to draw the attention of the cottage gardener to such inconsistencies, and to show him the necessity of examining his borders, discovering the worthless subjects that should be eliminated therefrom, and adding to his stock those of a better character. In the first place it should be borne in mind that flowers will not yield their full beauty unless well cared for, and our first, and in fact principal care, must be to thoroughly prepare the site by trenching in manure, and by adding fresh soil. The list of plants given further on will be mostly of a hardy character, and when once properly planted will be better without having their roots disturbed until they get too large for their allotted positions, hence the necessity for well working the land before planting. If the border be more than 4 ft. wide, a few evergreen shrubs of a compact growth, like the Box and Aucuba, may be planted along the back, at intervals of 5 ft. or 6 ft. They give a warm and cheerful appearance in winter when all else is dreary. Some of the different forms of Ivy, planted along the back and trained to stout stakes, form a striking permanent background. When they have attained the requisite height they may be pruned annually in spring, and will form close, dense pillars or pyramids. Ivy is common enough anywhere, and the large-leaved Irish, or even the common Wood Ivy, treated in this way, will add a new and an agreeable feature to cottage gardens that will be especially attractive in winter.

As regards edgings to the principal paths, I have seen many things used for the purpose, all more or less suitable. Box looks well when well kept, but it often becomes patchy and in bad condition. A neat, dead edging, such as tiles or bricks of a dark colour, will always have a smart appearance, but they are expensive. One of the neatest and best edgings I have seen for flower borders in cottage gardens for some time came under my notice last spring, and was composed of a thick line of Arabis albida. When in flower in spring it looked lovely; it had occupied the same position for several years, and the only trouble taken with it was to cut it well back after flowering. There are many hardy, close-growing plants well adapted for edgings, and involving a very trifling amount of expense or labour. The common House Leek makes a very neat edging, and will grow anywhere, and the trampling of little feet will not kill it. All work of the above-mentioned description should be done in autumn, for spring necessitates so much labour in the vegetable department that if delayed till then it will probably be imperfectly completed, and it is better so to arrange our plans as to avoid undue pressure at any season. Do not plant Hollyhocks, Phloxes, or other tall-growing plants too near each other, or to the front of the border. In arranging the borders the tallest plants should be at the back, and the next highest in succession till the

planting is finished off by a dwarf row along the front. All bare spaces can be filled up with neatly staked Sweet Peas in circular patches, Mignonette, and autumn and spring-sown annuals. The main features should be composed of hardy perennial plants, not too thickly planted, thereby leaving room for a few Stocks, Asters, and other annuals to give fragrance and beauty during the autumn months, when some of the permanent occupants will have ceased flowering for the season. If there be space for a narrow border under the windows of the cottage, dwarf plants only should be planted, so as not to obstruct the light. Sweet-scented flowers might be largely used. A few dwarf Roses, Stocks, Mignonette, Violets, Musk, and two or three Clove Carnations will, in combination with the Honeysuckle over the porch, make the cottager's garden a very fairyland on summer evenings; and no matter how small the space of course there must be a few bulbs, for no garden is complete without a few Snowdrops and Crocuses; and, above all, neatness should reign supreme, especially in the case of the flower borders near the cottage door. A few minutes once a week with the hoe will suffice to keep the soil in a healthy condition and destroy the weeds when small. The whole surface should always be frequently hoed over in dry weather about 1 in. deep, not a patch here and there, and then watering, even in the hottest weather, will be rarely required. All flowers that require staking should be attended to before they are blown over by the wind; and do not tie them all in a bundle, like a faggot, but place the stake a little distance to the rear of the plant, and draw the shoots up one by one and secure them loosely to the stake. It does not add to the health or appearance of a plant if it be tied too closely to its support; on the contrary, a slight waving with the motion of the air is natural and beneficial. In the case of some strong-growing species the shoots should be thinned out when only a few inches high; by so doing, the flowers will be finer, and they will last longer in beauty.

I have written thus far in the hope of helping the humblest class of cottagers in the management of their flower borders; but, as I have previously remarked, there are degrees in cottage gardens and gardeners. The proprietor of a two-light frame is on a higher level in horticulture than the man who has all his plants exposed, whilst the happy owner of a greenhouse, if only 8 ft. square, need never be at a loss for healthy and interesting employment. The possessors of those valuable adjuncts to good gardening, a greenhouse and a frame, often aim at too much, and frequently by overcrowding defeat the object they have in view. The cottager often aspires to have a real flower garden laid out in geometrical form, either on Grass or gravel beneath his windows. Bright-coloured flowers always look best on green turf, and since the introduction of small-sized mowing machines, small Grass plots can easily be kept in good trim; but small Grass plots, unless the work be well done at first, are often unsatisfactory from their settling unequally. Before the turf is laid, it is almost impossible to make the ground too firm, either by treading or, what is still better, have the whole surface rammed down thoroughly, especially if any of the surface has been recently stirred to any depth. Any one who lays down a geometrical flower garden, if it only contain four small beds, should endeavour to have it exact as to both level and outline. I have often been asked the question—What is the best way of planting a small flower garden of three or four beds? My answer has always been, Let every one please himself, and take into consideration his own means and taste. Why should one person go to the expense of providing fresh plants for his flower garden annually because his neighbour chooses to do so? Much of the enjoyment of a garden is lost unless one can plant the flowers one loves best in it; for example, let the man who is enthusiastic about the queen of flowers fill his garden full of Roses, not tall, gawky standards, but dwarfs on their own roots, or budded low down on the Brier or Manetti. They need not be all on a dead level; there might be pillars and pyramids of General Jacqueminot and other vigorous growers. Arches and bowers may also be covered with the rampant growers that will fill the air with fragrance, and if the enthusiastic amateur learn the simple arts of budding and making cuttings—both of which subjects will be referred to subsequently—he may indulge his hobby at a less expense than the bedding-out system would entail. My advice to amateurs and small occupiers is, If a man have a preference for any particular class of plants, let him indulge that preference by filling his garden with the flowers of his choice. I know it is said that a man with a special hobby is a bore (which remark may certainly apply in some relations of life), but it is not so in gardening. One may have his Rosery, another his Fernery, a third his Alpine garden, whilst a fourth may be an enthusiast in bulbous-rooted plants, and may desire to surround his dwelling with collections full of interest and beauty, from the humble Snowdrop to the gorgeous Tulip and the stately Lily. Others, again, may take delight in stateliness of form, and striking effects may be produced by hardy plants of commanding aspect. The Globe Artichoke, the large-leaved Rhubarbs, the Yuccas, Bamboos, the Pampas Grass, the Hollyhocks, the double Sunflowers, and a host of others, are fitted to adorn the dell or to clothe the sloping bank. But in the formation of their flower-beds let one and all eschew stars, diamonds, and all fancy patterns. A plain circle or oval or an irregularly-shaped bed with easy-flowing lines, would present a far better appearance than a flower-bed in the shape of which sharp angles prevail. If treated in this way, small gardens would possess more originality, be more interesting, and afford more room for novelty in arrangement. I know amateurs with small gardens who regularly every spring buy the same number of Scarlet Pelargoniums and Yellow Calceolarias to plant in their borders, and—unless a revolution or an earthquake takes place—will probably continue to do so to the end of their lives; and this not because they like these two plants better than all others, for they can thoroughly appreciate other species when they see them, but they hardly know how to make a change, and they are under the spell of that fashion that compels the multitude to follow in the footsteps of the few. I have previously urged that each should, in the matter of gardening, consult his own taste and wishes alone, but I should like to qualify it with a caution, viz., that in laying out or altering small gardens, there is a certain fitness of things in connection therewith that should never be lost sight of. One place, from the character of its soil and situation, may be naturally well adapted for one class of plants, but to fit it for something quite different, may involve a vast amount of labour and expense; for instance, it is of no use to plant Roses on a dry sandy bank, as that would only end in failure; but, with a slight alteration of the surface a very pretty Alpine garden might be made, such plants as Yuccas, Abies clanbrasiliana, the common dark-leaved Savin, the prostrate Juniper, St. John's Wort, Cotoneaster, and Vinca, being set to clothe the prominent points; whilst Sedums, Saxifrages, and a host of similar plants would be at home on the lower slopes. Suitable spots, also, could be found for Cyclamens, Primulas, &c.; and if a few large stones could be obtained and bedded in the hill-side, an attractive mound of hardy rock plants will be formed that would cost much less than forming a mockery of a terrace, with a few miniature beds laid out on it. I have known instances in which a round sum of money has been spent to perch a modern flower garden on the side of a cliff, in the natural home of Ferns and creepers, which latter would have made the place permanently beautiful at a very trifling cost.

Shrubs for Small Gardens.

From their many shades of colour and shapes of growth and foliage, shrubs are at all seasons as beautiful and interesting as flowers; and it must not be forgotten that many shrubs bear very beautiful flowers in addition to beautiful foliage. In almost every garden there is room for improvement in the character of the shrubberies. There is too much sameness, too little variety; everything is reduced to one dead level; group after group is composed of the same materials of the commonest description. In more than one nursery during the last year or two I have seen the quarters filled to repletion with the best kinds of evergreens and flowering shrubs, and but a limited demand for them, whilst the demand for common Laurel, common Yews, Lilacs, &c., could not be met. In the annexed list I have omitted Laurels, for although they are beautiful evergreens that will grow in any soil and situation,

they are not so well adapted for such places where it is sought to obtain the best effect in a limited space.

List.

Acer Negundo variegatum
Aucuba japonica
„ mascula viridis
Althæa frutex
Aralia japonica
Arbor-vitæ, Chinese
„ Siberian
„ golden
Arbutus Unedo
Berberis Aquifolium
„ Darwini
„ japonica
Box, various
Broom, yellow & white
Buddleia globosa
Catalpa syringæfolia
Cornus mascula variegata
Cotoneaster microphylla
Cotoneaster Simmonsi
Cupressus Lawsoniana
Deutzia gracilis
„ glabra
Escallonia macrantha
Euonymus japonicus variegatus
Forsythia viridissima
Genista præcox
Ivy, various
Holly, various
Juniperus stricta
„ sabina
„ prostrata
Kerria japonica
Laurustinus
Ligustrum aureum variegatum
Lilac, Persian
Magnolia conspicua
„ purpurea
Osmanthus ilicifolius variegatus
Pæonia Moutana Banksi
Phillyrea cordata
Pyrus japonica
Retinospora ericoides
„ filifera
„ pisifera
„ aurea
Rhus glabra laciniata
Ribes aureum
„ sanguineum
Spiræa ariæfolia Lindleyana
Tamarisk
Taxus baccata aurea
Thujopsis dolobrata variegata
Venetian Sumach

Where space permits there are many beautiful kinds of weeping trees, such as Sophora japonica pendula, &c.; and where trees of larger growth are admissible, the Weeping Lime is a fine tree for landscape effect, and one of the most delightful trees to shade a garden seat. Among the large family of Conifers, too, selections might be made of the most beautiful and interesting character.

Hardy Plants Suitable for Small Gardens.

	Colour.	Usual Height. Feet.
Anemone japonica	rose	2 to 3
„ Honorine Joubert	white	
Aster Reevesi	white and yellow	1
„ pyrenæus	blue and yellow	2 to 3
Alyssum saxatile	yellow	1
Anchusa italica	blue	2 to 3
Aquilegia glandulosa	blue and white	1
„ cœrulea	blue	
Campanula persicifolia	blue and white	1 to 3
Coreopsis lanceolata	yellow	1 to 3
Corydalis lutea	yellow	1 to 1½
Doronicum caucasicum	yellow	1
Geranium sanguineum	crimson-purple	1 to 2
Helianthus rigidus	yellow	3 to 4
Aubrietia purpurea	purple	¼
Delphinium formosum	blue	3
Helleborus niger	white	½ to 1
Iris germanica, and others	violet	2 to 3
Lupinus polyphyllus	bluish-purple	2 to 4
Polygonatum multiflorum	white	2
Pæonia officinalis, and others	crimson	1 to 3
Pyrethrums double, various	various	1 to 2
Phlox, various (the decussata section are hardiest and best)	various	2 to 3
Hollyhocks (unless required for exhibition seedlings from double flowers are usually satisfactory)	various	6 to 8
Vicia argentea	white and purple	1
Yucca filamentosa	white	3 to 5
„ gloriosa	white	3 to 6
Zauschneria californica	vermilion	1
Fuchsias—coccinea, gracilis, and others	various	4 to 8
Dielytra spectabilis	rose	2
Lilium candidum	white	3 to 5
„ tigrinum	orange-scarlet	
Tritoma Uvaria	orange and red	4 to 6
Lychnis chalcedonica	scarlet	2 to 3
Antirrhinums, various, from seed	various	1
Clove Carnation	white and crimson	
Chrysanthemums, various	various	2 to 3
Pentstemons, various	various	1 to 2
Hepaticas, various		
Primulas, single and double, the latter from seed		
Polyanthus, gold-laced, from seed		
Alpine Auriculas (the three last do best in a cool partially-shaded border)		
Sweet Williams		
Wallflowers		
Daisies		

I have purposely kept this list as short and select as possible, as long lists of names only tend to confuse those who are not well acquainted with plants. When once a beginning is made and knowledge is gained, there is a very wide field open for the enthusiast in such matters. The approximate heights and colours are given to assist the inexperienced planter in arranging his borders.

Plants for a Rockery.

Alyssum saxatile
Arabis albida
„ „ variegata
„ purpurea
Aubrietia purpurea
„ „ variegata
Bambusa Fortunei variegata
Campanula fragilis
„ garganica
„ carpatica
Cerastium tomentosum
Clematis Jackmanni
„ lanuginosa, pallida, and others
Dianthus deltoides
Dryas octopetala
Erica carnea
Convolvulus mauritanicus
Genista prostrata
Helianthemums, in var.
Hypericum humifusum
Iberis sempervirens
Lithospermum prostratum
Lysimachia nummularia
Saponaria ocymoides
Plumbago Larpentæ
Thymus lanuginosus
„ Serpyllum
Saxifraga bifiora
„ ceratophylla
„ hypnoides
„ oppositifolia
„ sarmentosa
„ granulata
plena
Saxifraga umbrosa major
Saxifraga umbrosa variegata
Saxifraga cristata
Sedum Ewersi
„ reflexum
„ carneum variegatum
„ Sieboldi
„ glaucum
Phlox procumbens
„ subulata
„ Nelsoni
Polemonium cœruleum variegatum
Spiræa Filipendula plena
Festuca glauca
Veronica spicata
Vinca major
„ minor
„ elegantissima

Many of the plants in the above list—indeed most of them will make capital plants for the front of a mixed border When allowed to spread out a foot or so in diameter they are far more effective at all seasons than when small patches are planted thickly; in fact, their true character can scarcely be seen unless they have room for development. Herbaceous borders or beds of Alpine plants should never be dug with the spade; a small fork or, in some instances, a trowel, will be the best implement to use amongst choice plants, many of which do not flower well until thoroughly established.

Hardy Plants with Fine Foliage or Habit.

Acanthus spinosus
Aralia edulis
Astilbe rivularis
Arundo donax
„ conspicua
Bambusa aurea
„ falcata
„ japonica
Bocconia cordata
Cannas, various
Carex pendula
Carduus erisphorus
Centaurea babylonica
Crambe cordifolia
Cynara Scolymus
Elymus arenaria
Erianthus Ravennæ
Ferula communis
Funkia albo-marginata
„ cœrulea
Gynerium argenteum and its varieties
Gunnera scabra
Helianthus multiflorus flore pleno
Heracleum pubescens
Panicum bulbosum
Phytolacca decandra
Polygonum cuspidatum
Rhubarbs, various
Tritoma, in variety
Yuccas, in variety

Striking effects may be easily produced by a judicious grouping of the above, allowing single specimens of such kinds as Arundo conspicua, Yuccas, and others of majestic or stately growth, to stand out on the turf or to fill in the salient points of the picture. Some pains should be taken to give them a good start by properly preparing the site by trenching and manuring, for plants with large spreading foliage require a good deal of support.

Hardy Bulbs.

Most people who grow bulbs in their gardens confine themselves to Hyacinths, Crocuses, Tulips, Daffodils, Gladiolus, Winter Aconites, and Snowdrops, but even in small gardens room may be found for some of the following:—

Lilium auratum, and others
Triteleia, various
Alstrœmeria aurea
Arum Dracunculus
Dodecatheon Meadia
Erythronium Dens canis
Oxalis Bowiei
„ floribunda
Leucojum autumnale
„ vernum
Fritillaria imperialis
Ornithogalum montanum
Scillas, various
Sternbergia lutea

Roses for small Gardens.

Baron Prévost
Baroness Rothschild
Beauty of Waltham
Charles Lefebvre
Comtesse d'Oxford
„ de Chabrilland
Duc de Rohan
Dupuy Jamin
General Jacqueminot
John Hopper
Jules Margottin
Louise Dargans
Madame Charles Crapelet
Maréchal Vaillant
Marie Baumann
Marquise de Castellane
Mrs. Rivers
Paul Neron
Prince Camille de Rohan
Victor Verdier
Xavier Olibo
Souvenir de la Malmaison
Madame Moreau

Tea Roses.

Cheshunt Hybrid	Madame Bravy	Safrano
Devoniensis	Madame Falcot	Souvenir d'un Ami
Gloire de Dijon	Maréchal Niel	
Goubault	Moiret	

Noisette Roses.

Aimée Vibert	Cloth of Gold	Solfaterre
Celine Forestier	Jaune Desprez	Triomphe de Rennes

Climbing Roses.

Dundee Rambler	Félicité perpetué	Aimeé Vibert
Banksian, white	Anna Alexieff	Maréchal Niel
,, yellow	General Jacqueminot	Gloire de Dijon
Boursault, common	Madame Domage	
China, common	Mrs. Rivers	

Window Gardening.

It has often been remarked that the gardening which is carried on under the greatest drawbacks often yields the greatest enjoyment. There is a feeling of satisfaction engendered by having surmounted difficulties that at first sight appeared insuperable. An active-minded man must have something to occupy his leisure time, and there is nothing gives so much real pleasure as the culture of flowers; the very care and thought that are necessary for success add a charm of their own, and increase the interest which one feels in their success. It has been said, "Give a man secure possession of a barren rock, and he will turn it into a garden," and this apothegm gives a very good illustration of what labour is capable of accomplishing when there is a prospect of its obtaining its reward. The return that is made in health and happiness has as certain a monetary value as if the cash actually found its way into the pocket. The large relative proportion of their incomes that many working men spend on their own enjoyment, and in which their families have no share, might be usefully turned into some other channel if they could be persuaded to look for amusement in some occupation in which the whole family might join. It is possible for those who have only a back-yard of limited dimensions, or even only the window-sills, to achieve horticultural triumphs of a very gratifying nature. The only really necessary qualification for a beginner to possess is perseverance; failures must be looked for as a matter of course, no one being exempt from them; but if rightly and earnestly considered, failures are our best teachers. Of course I am not now alluding to those disastrous failures, the natural consequences of neglect, but those only of a less serious character, which may be attributed to the improperly carrying out of some detail. It is usually the attention to small matters that makes the difference between success and failure. The person of small means and less experience who may set about turning his back-yard into a garden, had better not aim at too much at first. Success is more likely to be obtained by concentrating one's efforts upon a few subjects, and those of comparatively easy cultivation at the beginning. Perhaps one of the greatest inconveniences the small cultivator labours under in large towns is the difficulty of procuring suitable soil. And although plants derive a good deal of their sustenance from water and air, still it is also important that the roots should be placed in a good healthy soil. Road-scrapings, containing a small proportion of the droppings of animals, can generally be obtained in most places, and this with a few nodules of partially decayed turf, and any thoroughly decayed vegetable matter such as leaf-mould, will grow most plants that are desirable for a cottage with no greenhouse; and failing this, most florists sell suitable composts for a small sum per peck or bushel.

For spring or summer display in the back-yard or on the window-sill outside, boxes are preferable to pots, from the fact that the plants in them require less attention in hot weather, and wood being a non-conductor, the points of the roots are less liable to be scorched by the heat of the sun than if the pots are fully exposed. In growing plants in pots, some of the mistakes most commonly made by the inexperienced are potting too loosely, filling the pots too full with soil, and making inadequate, or perhaps no provision for drainage. Moderately firm potting is conducive to free and continuous blooming, even in the case of soft-wooded plants, whilst for hard-wooded plants it is indispensable; and there must be sufficient space left at the top of the pot, otherwise there will be a difficulty in giving the plants enough water, besides the extra trouble caused by washing the soil over the tops of the pots. A clear space of from ½ in. to ¾ in. will generally be sufficient for all sizes up to and including 6-in. pots. With boxes this rule need not be so strictly enforced, as the soil will be less liable to wash over. I have seen very good displays produced in back-yards and windows in towns, by using old raisin and soap boxes. With a few holes bored through the bottom to allow the surplus water to pass through freely, and a coat of green or stone-coloured paint, they present a decent appearance, and with care will last some years; and as regards the well-being of the plants, they will be as efficient as the most costly-constructed boxes. But whether boxes or pots be used, thorough drainage is most important. Broken crocks in three sizes can be easily and quickly obtained; one large crock should be placed over the hole, then a layer slightly smaller, and afterwards a handful of small pieces about the size of a Hazel Nut on the top, the whole being about 1½ in. thick, according to the size of the pot. Charcoal—small coke—and clean gravel may also be used in cases of emergency. A little clean Moss, or a thin layer of the roughest bits of soil, may be placed over the drainage to keep it open. Amateurs, as a rule, are rather too fond of potting in finely-sifted soil, forgetting that sifting takes out all the fibre which it is so desirable both from the mechanical office it performs in keeping the soil open, and from its gradual decay supplying the plants with food. Where soil can be made fine enough by crumbling it in the hands, it is better than sifting it; of course in the case of cuttings or very small plants, it may be found advisable to sift the soil.

Watering.

To know how and when to water plants in pots can only really be acquired by experience. There are so many varying circumstances in connection therewith, such as the state of the atmosphere, the condition of the plants (whether recently potted or with the pots full of roots), and a host of local conditions that have a more or less direct or indirect bearing upon it, that a correct estimate can only be formed on the spot. More errors are committed by overwatering than by keeping the plants too dry. When a plant requires water it makes known its wants in an easily understood language, by the shrinking and drooping of its leaves; and although the signs of constant repletion—sickly, unhealthy foliage—are none the less surely given, the evidence is delayed until the mischief is in many cases irreparable. From May to September the plants should be watered in the evening, and at other seasons of the year at an early period of the day. If a plant requires water, sufficient should be given to thoroughly moisten the whole soil; to water in dribblets only on the surface will most surely lead to difficulties, all the more mischievous in their consequences from their tendency to deceive. Soft water, somewhat near the temperature of the air, is the best for all plants, but where hard water only can be had, either a portion should be boiled and mixed with the remainder, or the whole should be placed in the open air twenty-four hours before it is applied. Some of my acquaintances attribute their success in the culture of window plants to their constant habit of giving their plants cold tea; probably boiled water would be quite as effective.

To know when a plant is dry at the roots, rap the pot sharply with the knuckles; if the sound emitted be sharp and hollow, the plant probably requires watering; if the sound be dull and heavy, it may be assumed that it does not lack moisture. This test, however, cannot always be relied upon, for the sound varies in some measure according to whether the plant has been potted firmly or loosely. A more reliable test is to take the plant up in the hand, and its weight will be a pretty good guide as to its condition; but when once experience has been gained, if the same person always attends to the watering, it is rarely that a mistake is made. The time that has elapsed since the last watering, the condition of the atmosphere, and other matters that only come under his

observation, will lead him, as it were, by instinct, to water at the right time, and to give the necessary quantity.

In outside window gardening, if I may so term it, there is abundant room for more variety than at present; many plants not commonly met with in such positions might be advantageously used. Bright and continuous effects may be produced by annuals alone if sown at different times and brought forward in boxes successionally. Ivy and other creepers might be planted along the front of the boxes, and allowed to hang down naturally over the side, or they may be planted at the ends and trained upwards. Virginian Creepers, again, are exceedingly useful for this purpose. The Canary Creeper and other Tropæolums would be quite at home in boxes outside the windows, provided the soil was rich, and water was liberally supplied. There are, in fact, so many things that may be successfully grown outside windows in boxes that one wonders that so little variety is seen. In order to keep a window gay and interesting I should suggest that several sets of boxes about 5 in. or 6 in. deep, be prepared, using the deepest ones for the summer-blooming plants. The year might be commenced with a box filled with Sedums, not necessarily all of one kind. There might be a mixture with the long shoots falling over the sides of the box gracefully on all sides; with the Sedums might be associated, in early spring, Crocuses and Snowdrops planted in October. Hyacinths and Tulips might also be intermingled, and there would be no occasion to re-plant the boxes every year. What a sensation would be created by a box brimfull of common Yellow Primrose early in spring, or the common Wild Hyacinth or Bluebell! Many a dweller in large towns, who was country-born, would be enraptured by the sight of the flowers of their childhood. Polyanthuses and Alpine Auriculas from seed would also be very effective, and could be obtained at a very small cost and trouble; in succession might follow autumn-sown annuals of many bright and beautiful kinds. In summer Pelargoniums, Stocks, Mignonette, &c., would look gay and give off a delightful perfume; and when the autumn and winter came round there would be dwarf Chrysanthemums, single Russian Violets, and dwarf Shrubs, including berry-bearing species. If some pains be taken with the Violets to get plants started early, they will begin flowering in autumn, and continue to bloom through the winter. There are numbers of plants that would be as effective as those I have named, or even more so, but I hope I have already said enough to show that the materials for beautifying the humblest home are neither scanty nor costly, and that the care and attention necessary to their successful development will open up new sources of thought and supply a pure source of enjoyment, all the more gratifying because untainted by selfishness. If the outside of the window may be described as the poor man's flower garden, the inside may, by a similar figure of speech, be called his hothouse; or he may have his aquarium, furnished with gold fish, and, to keep the water pure, a few aquatic plants.

As regards plants in rooms, boxes are hardly so suitable as pots, but the pots if desired may be plunged in an ornamental box and covered in with green Moss, which will impart a better effect than when the staring red pots are visible. Pots 6 in. in size will be found large enough for most subjects, and some would require pots of less size. For various reasons it is a bad practice to use pots a second time till they have been well cleaned out. All potting should as far as possible be done by the beginning of August. It gives time for the plant to get well established before the short days of winter. If the importance of this were more generally recognised, there would be fewer deaths among window plants in winter. Late potting, accompanied perhaps by a too free use of the watering-pot, causes soft, sappy growth at a time when maturation should be the first consideration. As a rule, when the days shorten less water will be required, but even then, whenever it is necessary to water at all, enough should be given to moisten all the soil, only it will be required much less frequently. These strictures upon late potting do not refer to bulbs. September is time enough for Hyacinths, Tulips, Crocuses, &c., as their natural period of growth is in the winter. Plant culture in rooms requires constant watchfulness; cleanliness is as important for the health of plants as for human beings. If the leaves be coated with dust, or the young growths infested with green fly, it is a sure sign of neglect on the part of the cultivator; the sponge should be used as often as convenient to remove dust from the leaves, and advantage should be taken of every warm shower to place the plants outside for a few hours. If a strict watch be kept the green fly, when it makes its appearance, may be easily kept down by picking them off without resorting to other remedial measures, which are all more or less troublesome to apply. The object should be to keep the plants clean and healthy, and by giving plenty of ventilation on all favourable occasions to make the growth hardy and strong. The ventilation of rooms where plants are growing is well worth some study, especially as I believe the more perfectly that is done the better will be not only the health of the plants, but also of the human occupants. In cold weather ventilate, if at all, only at the top of the window. Never allow a cold, keen blast from the east or north to blow through them, chilling their sap and almost shrivelling up their foliage. Be particular to open the windows early in the morning when the weather is favourable; and, on warm sunny days, especially in early spring, a free ventilation will be beneficial to give colour and strength to the young growth. In spite of all the care taken to insure strong, healthy growth, should insects attack them in large numbers, they must be destroyed, or they will ruin all hopes of obtaining good blooms. This may be effected either by fumigation or by washing with an insecticide. A friend of mine, whose windows were the admiration of all who saw them, made a wire frame and covered it with oiled calico, and whenever he saw any flies on his plants he moved them to the back kitchen table, placed his calico cover over them, and introduced a small iron plate on which a red-hot coal or two had been placed, with sufficient Tobacco placed on the coals to fill the calico cover full of smoke, which very effectually destroyed the insects; the Tobacco, however, must never be allowed to flare or blaze, or the tender foliage of some plants will suffer. A very useful dip may be made by dissolving 2 oz. of soft soap in a gallon of soft water; then place 1 oz. of Tobacco in a basin or other vessel and pour over it 1 quart of boiling water; when the strength has been extracted from the Tobacco, the liquid may be passed through a strainer and mixed with the soap and water. The plants should be taken one at a time and their heads dipped in the mixture, taking care that none of it gets into the pots. After dipping lay them on their sides for a few minutes, and before the solution dries on them rinse them in clean water. Either of these methods will effectually destroy the insects without injuring the plants; but, as I have previously stated, never allow the plants to suffer from want of water; pay special attention to ventilation, taking advantage of warm showers to place them outside for an hour or two, and keep a watchful eye for the appearance of the first fly, and destroy it before there is time to found a colony of them.

Rooms in which gas is burned, unless very great care be paid to ventilation, are not suitable for plants in blossom. Succulents—that is, plants with thick, fleshy leaves—may succeed; but flowering plants should be removed to another room at night when the gas is lighted, if they are to be kept in health and the flowers from dropping prematurely.

Plants Suitable for Outside Window Gardening.

Arabis albida	Hepaticas, various	Phlox frondosa, and others
Alpine Auriculas (cool position)	Iberis corifolia	Pansies, various
Astilbe japonica	Lithospermum prostratum	Sibthorpia europæa
Aubrietias, various	Linaria Cymbalaria	Sedums, many kinds
Cheiranthus Marshalli, and others	Lysimachia nummularia	Saxifrages
Chrysanthemums, Pompones, various	Musk	Sempervivums
Calystegia pubescens	Mentha argentea variegata	Thymus aureus marginatus
Campanulas, various	Primulas, various (cool position)	Vinca elegantissima
Cerastium tomentosum	Polyanthus	Violets, Russian and others
Daisies, various		Veronicas, various

Annuals for Windows.

Nemophila insignis	Limnanthes Douglasi	Stocks
Saponaria calabrica	Myosotis dissitiflora	Asters
Silene compacta	Mignonette	Collinsia bicolor

Shrubs for Window Gardening.

Aucuba japonica	Cotoneaster microphylla	Jasminum nudiflorum
,, ,, mascula viridis	Deutzia gracilis	,, officinale
,, ,, vera femina	Erica carnea	Virginian Creeper
Euonymus, various	Helianthemums, various	Clematis, various
Box, various	Hydrangea hortensis, and others	Laurustinus
Berberis Aquifolium	Ivy, various	Acer Negundo variegatum
		Yucca filamentosa

Plants for Suspending in Baskets.

Calystegia, various	Lophospermum scandens	Tropæolums, various
Cobæa scandens	Lysimachia nummularia	Vincas
Convolvulus mauritanicus	Lycopodium denticulatum	Campanula garganica, and others
Pelargonium, Ivy-leaved, various	Saxifraga sarmentosa	Sedum carneum variegatum, and others
Linaria Cymbalaria	Nierembergia gracilis	Cereus flagelliformis
Lithospermum prostratum	Tradescantia zebrina	Isolepis gracilis

Summer Creepers for training outside.

Canary Creeper, and other Tropæolums	Lophospermum scandens	Cobæa scandens
		Maurandia Barclayana

Plants for Pot Culture in Rooms.

Aloes, various	Cytisus racemosus	Mignonette
Astilbe japonica	Cactus, various	Mesembryanthemums
Cyclamen persicum—hybrids	Hydrangeas	Roses
Calceolarias	Fuchsias	Pelargoniums, various, not forgetting the old sweet-scented kinds
Cinerarias	Lobelias	
Campanulas	Lily of the Valley	
Chrysanthemums	Musk	
	Myrtles	Petunias

Ferns for Shady Windows.

Aspidium exaltatum	Pteris cretica albo-lineata	Cyrtomium falcatum
Pteris serrulata	Asplenium flaccidum	Phlebodium aureum
,, tremula		

many other kinds may be added, such as

Lastrea Filix-mas cristata and others	Polystichum, various	Lycopodium Wildenowi
Asplenium Adiantum nigrum and others	Polypodium, various	,, apodum
	Lycopodium denticulatum	

Bulbs.

Snowdrops	Narcissus	Scillas
Crocuses	Anemones	Sternbergia lutea
Hyacinths	Ranunculus	

Hints on Propagation for Cottage Gardeners.

Budding Roses.—The stocks should be planted in the autumn for budding the following summer. The Manetti is the best stock for light soils, and the Brier for heavy ones. Wherever the Brier grows luxuriantly in the hedgerows, in that neighbourhood it may be planted with safety; the stocks may be raised from cuttings, or in the case of the Brier, from seed also. Plenty of seedling Briers may be obtained from the hedge-rows, and if planted early in autumn, will be available for budding as dwarfs the following summer. Manetti stocks are very easily raised from cuttings, about 8 in. or 10 in. long, planted firmly in rows 1 ft. apart, leaving two eyes out of the ground. At the end of the first year they should be lifted, the upper roots cut off, the branches trimmed in and planted 1 ft. apart in the rows and 3 ft. between the rows. The object of trimming off the upper roots is to permit the stock to be planted further out of the ground, and to put the bud in low down on the stock, so as to produce neat and compact plants. Great care should be taken in cutting out all buds from the bottom portion of both stocks and cuttings, to prevent suckers forming underground. In the summer of the second year from the cutting they are usually strong enough for budding. In the case of dwarf Roses the buds should be inserted close to the ground, and if a little of the soil round the collar be removed with a pointed stick or some small instrument, the bark thus uncovered will, in dry seasons, work with greater freedom. Budding is a very simple operation, and a few minutes' practical instruction will give more information than can be imparted by a whole chapter of description; but for the benefit of those who cannot readily obtain a practical lesson I will endeavour to describe the operation as plainly as possible. There are two modes of budding:—the old plan is to make a horizontal cut just through the bark as low down the stem as possible, and from that a downward cut at right angles about 2 in. long (thus, T), just large enough to insert the bud, care being taken not to cut too deeply, only just dividing the bark. The cambium or inner bark should not be disturbed in the operation. The other plan is simply to make a cut downwards, carefully raising the bark, and sliding the bud under. There is less mutilation in the latter plan, and the union is generally complete. It involves a little more trouble till one gets expert, and, perhaps for budding on the ground, the amateur will adopt the old-fashioned plan. The best time for budding Roses on the Brier is when the Roses are in the full flush of their first bloom. A certain amount of discrimination is necessary in selecting the buds so as just to have them at the right stage. As a rule it may be taken that when the thorns will rub off easily the buds will be in the requisite condition, and the bark will work freely and easily. Some people attach importance to taking buds only from flowering shoots, but I have taken buds wherever I could get them without finding any material difference to ensue. In theory it promises well, but in some places the difficulty is to infuse vigour into the plants; when that is done there is no difficulty in producing bloom. In cutting out the buds take the shoot in the left hand, remove the leaves, but not the leaf-stalks, then holding the knife, which I need hardly say should be as sharp as a razor, in a slanting direction, cut about half an inch below the bud, pass the knife up the shoot, and come out about half-an-inch above the bud, taking off the bud and a thin slice of wood with it, which can be afterwards removed by inserting the point of the knife at the lower end, and pressing it with some force against the end of the thumb. If the eye of the bud comes out with the wood, the bud is useless. There is no advantage in having the shield of the buds very large, as they are more difficult to manipulate, and will require a larger incision to be made in the stock. As fast as the buds are inserted they should be tied closely down either with soft matting or worsted yarn, so that the air may not enter. Buds that remain dormant till the following spring usually make the strongest plants, therefore the stocks should not be cut in or headed down till the following March. In the course of a month or so after budding they should be looked over and the ties loosened to allow room for the buds to swell. Standard Roses should be budded in the same way, only of course the buds should be inserted in the young wood of the same season's growth, close down to the base of the shoot, in order to form compact heads. One advantage the Manetti has is that it can usually be worked late in the season, and the plants make splendid heads in one year. Roses can also be grafted both on the stems and the roots; but as I consider budding to be the best plan for the small cultivator to adopt, I shall confine my remarks to that alone.

Roses from Cuttings.—The least troublesome method of striking Rose cuttings is to take off the cuttings about the first or second week in October, and not later. Select only strong well-ripened wood, and make the cuttings from 6 in. to 8 in. long, making a clean cut just beneath a joint to form the base of the cutting. Plant them in rows in an open situation, leaving about two buds exposed, the remainder to be buried in the soil and made firm. Mulch with some non-conducting material such as sawdust, old tan, cocoa fibre, or any similar material. I have tried cuttings both in a north and also in a south aspect, but there is no better plan than placing them in some open situation, and mulching to maintain an even temperature and regular state of moisture in the soil.

To Propagate Hardy Herbaceous Plants.

This may be readily accomplished either by division of the roots in autumn or spring; by cuttings put in on a shady border in summer; or in some instances by seeds sown in autumn or spring. Cuttings of the young shoots will root readily about June and July in a cool shady border. It is best to prepare a small bed by adding sand, road-scrapings, and leaf-mould, as the cuttings can be put in when convenient. Pansies, Pinks, Carnations, Phloxes, Pentstemons, and all hardy plants can be propagated in such a bed. A few pliable sticks can

be hooped over the cuttings, and a mat or some protecting covering placed over on bright, sunny days. The cuttings may be from 2 in. to 4 in. long, according to what kinds they consist of, and should be cut across just under a joint, with a sharp knife; if the knife be not sharp the tissues, instead of being smoothly cut, will be bruised and so damaged as to stop all circulation, and the cutting will probably damp off and decay instead of forming roots. Unless the leaves are large and flaccid it is not advisable to remove more than the bottom pair, so as to give room to insert the cutting, for the leaves have a most important function to perform, and the more leaves a cutting carries, always provided they can be preserved from flagging, the sooner roots will be formed. Of course if a hand-light or a close frame be at hand, to keep a close atmosphere round the cuttings, their rooting will be more expeditiously and certainly accomplished.

Sowing Flower Seeds.

Most hardy annuals, biennials, and perennials, will do better if sown in August than if the sowing be delayed till spring. Not only is it the most natural time for sowing, but the land is usually warmer and the seeds lie a shorter time in the ground before germinating, and they consequently produce a stronger and healthier plant, and they are less liable to be eaten off by insects; and, lastly, much time is gained, for, instead of sowing the seeds in March, you have young hardy plants ready to put out. Seeds of hardy biennials and perennials are best sown in well-drained ground, arranged in 4 ft. beds, with a track or alley 1 ft. wide between them, for the convenience of weeding, thinning, and lifting the plants. The soil should be in a well-pulverized condition, and if too dry should be well soaked with water twelve hours before sowing. They may either be sown broadcast, or in shallow drills across the beds; the latter plan is the best, because it gives facilities for stirring the soil between the rows of young plants. The drills can be made by pressing a 4 ft. rod or straight edge into the soil the required depth, according to the size of the seeds; half-an-inch will be deep enough for all small seeds, and when the seeds are sown thinly in the drills, cover lightly with finely sifted soil. If the weather be hot and dry, shade by laying mats, or similar coverings, on the ground. If the patches be small, Rhubarb leaves will answer the purpose very well, and they are usually at hand; they must, however, be removed as soon as the young plants appear. When annuals are sown in the spring in the borders where they are intended to remain, they are usually sown too thickly, and the thinning delayed too long, consequently they never attain their proper development—the flowers are poor, the growth weak, and the whole plant short-lived. This is the main cause why annuals are in many places so unpopular. If sown on good land, and such plants as Nemophilas, Saponarias, &c., thinned out, so that every plant has not less than half a square foot to grow in, they would present a much more satisfactory appearance than they usually do.

The Large White Jasmine.—It is a matter to be regretted that this is not more generally grown than it is, for it is one of the sweetest, most beautiful, and most useful Jasmines we have. It will grow in almost any soil, and cover any house or outbuilding with a mantle of beauty perhaps sooner and more effectually than almost any other plant. I was pleased to see attention called to this Jasmine (see p. 97); it is a very fine variety of Jasminum officinale, but scarcely so hardy as that kind. We have had some magnificent plants of it here, reaching to a height of from 10 ft. to 15 ft., but they have always got cut down after a few years with any extra severe weather. I am inclined to think that there is yet another variety intermediate between J. officinale and J. grandiflorum, larger flowered than the common type, but not so large as the J. grandiflorum. The latter is worthy of the back walls or roof of a cool house. The flowers and foliage are almost as large again as those of the common sort, and it is one of the most useful flowers for bouquets if to be used immediately, but if many hours elapse between the making and using, the flowers must be gummed on at once. They are not very durable, though the large-flowered variety has greater substance than the common kind. Both the Silver and Golden Variegated Jasmines belong to the common type. The Golden one is very beautiful in leaf and branch, for both often become quite golden, but the flowers are poor, being smaller than those of the common Jasminum officinale. These variegated Jasmines have, however, a special interest in a scientific point of view, as several of the old vegetable physiologists affirmed that a single bud or small scion of the Variegated Jasmine inserted in the green caused the green plant to break into variegation far from the point of contact, and that also whether the bud or scion lived or died; I have never, however, found such results.—D. T. Fish.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

The noblest flower of the week is the large trumpet-like Neilgherry Lily (Lilium neilgherrense), a noble, creamy-white, and richly-scented flower. The handsome Senecio pulcher, recently figured in The Garden, is in flower in the Hale Farm Nurseries. The double form of Clematis erecta is an effective subject on walls, or, indeed, on banks or stumps; the quaint Gladiolus purpureus, or one of its forms, is in bloom at the Wellington Nurseries, as is also a brilliant Pentstemon (P. puniceus). The tall, white Hyacinthus candicans is in flower at Barr's trial ground, where it is hardy. The Gypsophilas are seldom showy, but they are valuable for their numerous sparkling little blossoms, their freedom of growth, and prolonged bloom; one kind (G. dubia) has been in flower at the Wellington Nurseries for two months, and it is yet quite fresh and pretty. The double French and African Marigolds, and the various annual Larkspurs are very effective just now where tastefully disposed. Some of the Aconites, too, are very fine; but the season has, on the whole, been very much against hardy flowers and flowers of all kinds, though it would be easy to counteract such results by effective mulching and watering.

Influence of Coast Climate on Alpine Vegetation in Norway.—The meteorological maps of Norway show in a striking manner what great influence the ocean has on the climate, and, therefore, the situation of a region relatively to the sea is of the greatest significance to the vegetation. The greatest variety of species is there found, under otherwise similar circumstances, in those regions which are best protected from the sea air, which is borne over the country from the North Sea and the Atlantic by the ruling south-west winds. . . . This appears in a striking manner when we pass in review those places which are remarkable for a rich Alpine vegetation. . . . As to the influence of temperature on the vital phenomena of plants, we know still so little, that we must confine ourselves to guessing. But we do know, however, that Arctic and Alpine species in the Botanic Garden at Christiana endure the strongest summer heat without injury, while they are often destroyed when not sufficiently covered during the winter. We know also that they have the quality of vegetating at a very low temperature above freezing-point. Catabrosa algida, Ranunculus glacialis, nivalis, and many others grow on the borders of our snow-fields, and their roots are constantly wetted by the snow-water, which has a temperature only a little above freezing-point. As soon as the snow is melted they begin to germinate. Mild, snowless winters, in which some warm days alternate with periods of cold, would be pernicious to plants of such a nature. The coasts in the province of Bergen (where the coast mountains are especially poor as regards botany, particularly in Alpine plants) have the mildest winters in Scandinavia. But the mountains and mountain-valleys, which are protected by our highest mountains and largest glaciers, have a continental climate with a more rapid transition from winter to summer. In these regions, even in the southern part of the country, the Alpine plants often descend far into the valleys, and there endure a forcing summer-heat. In Vaage and Lom we find many of them in the corn-belt (1200 ft. to 1500 ft. above the sea), nay, some of them have their greatest extension in the valleys; and it is on the whole remarkable that many Alpine plants appear more frequently in the lower parts of the mountain region (the Willow and Birch belts) than in the higher parts (the Lichen belt); possibly the reason may be, that in the deep valleys and on the lower slopes there is better shelter against the ocean than on the heights.—Axel Blytt. [Great importance must not be given to considerations of this character, unless all the conditions of each case be understood. In some cases there is a rich flora near the sea, partly owing to its influence. The influences of Arctic and genial seas would, for example, be very different. So far as artificial culture is concerned we believe that a greater number of Alpine plants could be grown in perfect condition near the sea in Britain than in any inland situations wholly sheltered from its influences.—Ed.]

Showy Cone-flower (Rudbeckia speciosa).

Bowie's Wood Sorrel (Oxalis Bowiei).

Peacock Tigridia (T. Pavonia).

Marvel of Peru (Mirabilis Jalapa).

Cape Phygelius (P. capensis).

Spotted Galatella (G. punctata).

Dracocephalum argunense.

Large-flowered Scutellaria (S. macrantha).

Tall Sea Lavender (Statice elata).

The Tube-flowered Lily (Lilium neilgherrense).

Nycterinia selaginoides.

Sedum maximum.

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

THE KITCHEN GARDEN.

BROAD BEANS.

These include Mazagan, Windsor, and Long-pod, which are the earliest kinds of Beans that can be produced out-of-doors (inasmuch as being perfectly hardy), that can be sown at any time during the winter. As a rule Broad Beans are not thought so much of in some quarters as Kidney Beans, owing to their being of a coarser character, but they are nevertheless much sought after. Generally they are not considered a very remunerative crop, inasmuch as they do not continue long in bearing. Broad Beans may be grown in almost any soil that can be kept moderately moist. The green-seeded varieties are generally preferred to the white ones, because they retain their green appearance when cooked, whilst the white ones become dark brown—a colour to many very objectionable. The green kinds are those mostly grown by market gardeners, as they realise higher prices than the white ones.

Sowing and Planting.—Years ago it was the practice to sow Broad Beans in October, November, and December for the earliest crops, but this is now seldom done; the plants are generally raised in pots, boxes, or frames, and afterwards transplanted to the open ground. This is undoubtedly the best plan when it can be adopted, as the ground that would otherwise be occupied by the seed can be ridged or roughly dug, and exposed to the weather to get pulverised and freed from slugs, snails, &c. By adopting the method of transplantation fuller and more even rows can be ensured. The sowing should be made early in January in a frame or pit, from which frost is excluded, or a sowing may be made in heat in February and gradually hardened off after the plants are up. The plants should be grown stout and strong, and be in readiness for turning out early in March, provided the weather be favourable. A south border, under a wall or hedge, should be chosen for them if possible, and after planting, if planks or thin boards can be placed edgeways on each side of the rows to protect them from cold winds, all the better. The rows should be planted from 2 ft. to 2½ ft. apart, and the plants in the rows should be 4 in. or 5 in. apart. This will be found to be room enough for early crops if dwarf varieties be grown. If the weather be favourable throughout the spring the crop will be fit for use by the middle of June, which is as early as Broad Beans are generally expected to be fit for use. Successional sowings may be made in the open ground in January and February, and the principal sowings should be in March and April. If late crops be required, small sowings may be made as late as July; this is, however, seldom done. In order to obtain late crops some growers, after gathering the produce from the main or summer crops, cut down the plants to within a few inches of the ground, then give them a good watering, and in a few days they throw out young shoots which eventually furnish a fair crop of late Beans, though, of course, not so fine as the previous crop. Others sacrifice part of the summer crops, and cut down the plants just as they are coming into bloom. The produce from these is small, and finer than that from plants that have previously borne a crop. Either of these ways is, however, preferable to sowing for late crops, inasmuch as the plants are hardier, and being well rooted stand the dry weather late in the summer and the cold in the autumn. By this method Beans of fair quality may be had up till late in November, unless the weather be unusually severe. Sowings for successional and main crops may be made on open quarters, or between rows of Spinach or any other crop that will be cleared before the Beans get very high; the former, however, is best when ground can be spared. The seed should be sown in rows from 2½ ft. to 3 ft. apart, the Beans being placed about 4 in. or 5 in. apart, and they may either be put in with a blunt dibble, or drills may be drawn for them 2 in. or 3 in. deep. Previous to sowing main crops the seed should be soaked in water for a few hours to accelerate vegetation; but for early crops it is unnecessary, as the ground is generally moist enough to answer the purpose.

Earthing up.—This is advisable for early crops, for it affords a slight protection to the plants during cold, windy weather; but for other crops it is not needed. When the plants show sufficient bloom to produce a good crop, their tops may be picked out in order to enhance the setting of the blooms and development of the pods. Where tall varieties are grown some support should be given them to prevent their being broken by the wind. The best support is thick twine tied to strong stakes driven in the ground on each side of the rows. Long, slender sticks, tied to the stakes lengthways along the rows, will answer, but the plants are apt to get bruised against them when swayed to and fro by the wind.

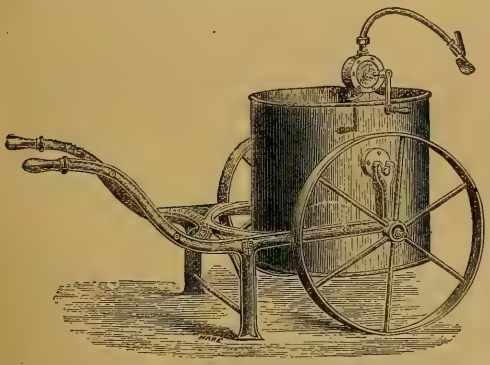
Varieties.—Although there have recently been many new and valuable additions made to our lists of Beans, there are some of the older kinds that still unflinchingly maintain their position. The dwarf kinds of Mazagan are those generally grown for early crops, not because they are naturally earlier than the taller kinds, but because they can be grown in warm situations where taller kinds would not always be admissible, and can, therefore, be got earlier. Dwarf kinds are sometimes preferred for the smallness of the Beans rendering them more delicate-looking than some of the larger varieties. Of dwarf kinds Beck's Green Gem and the Dwarf Fan are two of the best. The plants assume a neat, compact habit, are abundant croppers, and good in quality; in this respect, however, Beck's Gem is preferable, on account of its green colour, that of the latter being a dullish brown. The taller kinds of Mazagan are not worth growing in comparison with the Long-pods and Windsors, but where small Beans are preferred, they answer the purpose. The plants grow from 3 ft. to 4 ft. high, and produce large quantities of pods 3 in. to 4 in. long, containing from three to four small Beans. The Long-pods are earlier than the Windsors, and are therefore preferable to them for first and second early crops. Of these there is no variety better than Johnson's Wonderful; it grows from 4 ft. to 5 ft. high, and is a splendid cropper, producing the green pods from 7 in. to 8 in. long, full of Beans that are not excelled in quality. Carter's Mammoth Long-pod is likewise a very excellent variety. The Green Long-pod is largely grown in private establishments, the colour of the Beans when fit for use being of a bright green. The Seville Long-pod is a variety of Broad Bean that has been for many years in cultivation on the Continent, especially in Spain, where it has done good service in the way of supplying food during the war. It well deserves the high commendations bestowed upon it, and ought to be in every good garden. The true variety, however, is somewhat difficult to obtain, inasmuch as long-podded Beans, in every respect different from it, are often supplied for it; while a Spanish Bean, very similar to it as regards seed, but short-podded, is sold under the name; hence its introduction into English gardens is but slow. It is, however, an early and long-podded variety, and quite distinct from any other. Its pods are tender, and fit for use ten or twelve days before the common long-podded sorts. It grows moderately robust, with one or more slender stems, according to the distance at which the plants stand apart; its leaves are of a bright green colour, and its pods, three to six on each plant, are extremely long, measuring often 6 in. to 10 in. in length, and 1 in. broad; they are of a bright, fresh green colour, quite pendent, and contain from five to eight Beans, which are bright fawn-coloured, obovate, flattened, and the largest after the Windsor varieties; being rather more tender than other varieties, they should be sown in a warm, well-protected border, which should be slightly covered with rough litter in the event of frost. Being only a moderately-heavy cropper, and not so hardy as some other sorts, it is not adapted for field culture in England, but as a garden Bean it is well worth attention. The Windsor is most suitable for main or late crops. The Improved Broad Windsor grows from 2½ ft. to 3 ft. high, and has pods 5 in. to 6 in. long, and 1½ in. broad, containing two or three very large Beans of excellent quality. This is a much esteemed sort. Hardy Pedigree is a good hardy sort, which much resembles the old Toker Bean. Green Windsor, Loxford Windsor, and a variety called Thick Windsor, are all good sorts, on which full dependence may be placed.

Soil, Mulching, and Watering.—A deep, well-drained, strong loam is most suitable for Broad Beans, with the exception of early crops, when the soil may be of a lighter character. Where the soil is too light it may be improved by treading it firmly whilst in a dry state, or planting without digging. If

the ground in which Beans are to be grown has been manured for previous crops, it will be found sufficiently rich for them, as a very rich soil will produce too luxuriant a growth, which is inimical to the production of pods. During dry weather it is a good plan to give a good mulching of half-rotted manure between the rows of main crops of Beans to save watering, but it should be done before the plants are in bloom in order to keep the roots in a moist condition whilst the blooms are setting, this being highly necessary to the production of large full pods. Watering is seldom necessary for Broad Beans, if grown in a deep soil; where, however, the soil is shallow, it may sometimes be needed, in which case it should be thoroughly done and afterwards the ground should be mulched. Beans are often gathered for table before they have attained half their size; but this is not advisable, as they sometimes taste bitter when so small. The best flavoured Beans are those that are full grown but young. If any are required for soup a row may remain until they become black-eyed. When gathering for exhibition choose young, long, straight, and shapely pods, as nearly alike as possible, and the more Beans they contain the better. S.

IMPROVED WATER-BARROW WITH ROTARY PUMP.

Allow us to bring under your notice our water-barrow with patent rotary pump attached, for garden purposes. This pump is of a novel character, simple in construction, and efficient in action. It can be



worked easily, and is capable of drawing water from 6 to 8 ft., and throwing a continuous stream to a distance of 40 ft. The larger size will throw water 45 to 50 ft. It is a well-made article, and if treated with care (as any piece of good machinery should be) will last for many years. It is not absolutely necessary for the pump to be affixed to a water-barrow, but it can be adapted to any position. Barnard, Bishop, & Barnard, *Norwich*. [We have tried one of these machines—the largest used for garden purposes—and find that it works easily and throws water with great force to a distance of quite 50 ft. It is an improvement on garden engines as ordinarily constructed.]

AUTUMN AND WINTER SALAD PLANTS.

To produce a supply of salad, crisp and good, throughout the autumn and winter months requires considerable skill and forethought. It is an easy matter to supply Lettuces and other materials for a salad bowl from the end of May to the end of August, but to maintain a constant supply from the end of summer onwards, through the dormant season, requires altogether a different mode of procedure. From the end of June to the end of August is the chief time during which preparation should be made, either by sowing seeds or transplanting young plants already raised that will be required to keep up the supply during autumn and winter. The following are fair samples of what are likely to be required, viz.:—Lettuce, Endive, Radishes, Cresses, Beet, and Celery.

Lettuce.

To produce stout and crisp Lettuce requires some care, and this is especially necessary during the heat of summer. Many select shady situations, but the propriety of this course is very questionable, at least during some seasons. Lettuces require a rich, generous soil, one that is tolerably strong, and which contains plenty of moisture. Soils naturally loamy, or of a somewhat adhesive character, produce the finest Lettuce in hot weather, or, indeed, at any period of the year, provided no stagnation exists beneath. During the summer I obtain the finest crops of Lettuce on the ridges between Celery trenches. Successional sowings must be made to provide plants for the last four months in the year. A sowing should be made about the 25th of June, a second about the 10th of July, and a third about the 25th of that month. The earliest of these sowings will furnish the best supply from the open ground, and the produce of the last sowing made can be lifted and put into frames as soon as danger of frost severe enough to injure them is apprehended. Where there is frame accommodation, another sowing should be made during the first week in August, the young plants from which should be transplanted in cold frames or pits, where they can be protected with glass during winter for an early spring supply; for, if they get beyond a certain size, they will not stand without protection. The best variety for these sowings is the true Bath Cos; it is very hardy, and very crisp and good. It is not advisable to sow the tender summer varieties after the beginning of July, for they are apt to suffer from damp when the cold and damp nights of autumn set in; and the tenderer and more blanched they are the more susceptible they will be of being injured. The crop for early spring use should be sown about the 20th of August. These will be ready to transplant by the middle of September. Part of the plants should be planted on an old exhausted Cucumber bed for early use, and the others planted at the foot of a south wall to produce the first spring supply in the open ground. Those planted in the open will require no further attention until March, except occasionally stirring the soil and removing fallen leaves. In cases of severe frost, a few evergreen branches might be placed over them, to prevent them from being severely injured, which makes them later before they are fit for use. Lettuces require plenty of water in dry weather, and they rejoice in liquid manure; but this should not be supplied too near the time of using them.

Endive.

This comes in to fill the blanks when Lettuces fail in mid-winter. It is seldom good in hot weather, and is very impatient of severe frosts and moisture combined. The end of June and July is the principal time for sowing Endive, and three sowings—one made the last week in June, another the second week in July, and the last at the end of July—will supply the table from October to March. The value of Endive depends upon the thickness of the heart, and upon its being thoroughly blanched. To secure a bulky heart, I have known some gardeners cut the plants over several times with a large knife, or the scythe, before planting, while they stood on the seed-bed. This induces the plants to grow stiff, rather than thin and weakly. Endive requires a rich and mellow soil; and rotten manures may be supplied with a liberal hand. It requires blanching before it is fit for use, and this can be done either by tying the leaves together, by covering it up with pots, or taking up the plants with balls and introducing them into a dark shed, where they will be beyond the reach of frost. By liberal culture, and thus sowing in succession, Endive may be had in good condition through autumn, winter, and spring.

Radishes.

These, for autumn and winter use, must be sown at intervals, from the beginning of August till the middle of September. To produce a crop fit for table at Christmas they must be sown in a frame the first week in October—say, a frame that has been used for Cucumbers or Melons—which should be filled within several inches of the glass with light soil; sow the seed not too thickly, protect from birds, and give plenty of air when the weather is mild. Protect from frost by covering and mulching round the frame, and there will be plenty of Radishes for salad on Christmas day. For sowing

in the open ground in summer and autumn, I prefer the white Turnip, and Wood's Short-topped and French Breakfast for the frames.

Cresses.

The Curled and Broad-leaved American are the most distinct and useful kinds. For a constant supply of the Curled Cress, frequent sowings must be made, as it soon runs to seed; the other lasts a considerable time, and bears without injury the severest frosts of winter. The American Cress should be sown at the end of July, in drills, 8 in. apart, and thinned to 4 or 5 in. asunder in the drills. Watercresses are generally expected to be found in streams of water, but this Cress may be had in great abundance, and of good quality, by sowing a row under the shade of a north wall, where it grows with great freedom, and will be found useful for the supply of salad.

Beet.

For salads, medium-sized roots are best. Beet thrives satisfactorily in a deep sandy loam that has been enriched for previous crops. Ground for it should be thrown up into ridges and exposed as much as possible to the pulverising influence of frost. The seed should be sown in drills 2 in. deep and 1 ft. apart, and when the plants are sufficiently large to thin, they should be left about 9 in. asunder in the rows. The ground should be kept free from weeds by means of frequent stirrings with the Dutch hoe, an operation which should be continued until it cannot be performed without injury to the plants. The varieties which I prefer for general use are Henderson's Pine-apple, Nutting's Dwarf Red, Dell's Crimson, which is valued for the beauty of its foliage, and Egyptian Dark Red Turnip-rooted, a handsome sort that turns in quickly, and one which is valuable for early use.

Celery.

This is the most extensively used during autumn and winter, and occupies a larger space of ground than any other vegetable used for the same purpose. Celery, to be enjoyable, should be firm and crisp, not stringy, and should possess a peculiar nutty flavour. One of the essential conditions required in the cultivation of Celery is plenty of manure; with this, and heavy applications of sewage in dry weather, it may be produced in perfection. The manure should be thoroughly decomposed, and well worked through the soil. It is a very common practice to dig into the bottom of the Celery trench a spit of raw manure, with the idea of producing fine heads of Celery, but this is bad in principle as well as practice. The manure should not be used in a raw state, for its action is expected to be immediate, and, consequently, the mixture in which the roots are to ramify ought to be at once good and suitable for them. About the middle of February I sow for my first crop. The seed is sown in wide, shallow pans, and either placed on a gentle hot-bed, or started into growth in a Vinery. As soon as the seedlings are fairly up, or say half-an-inch high, the pans should be placed in a somewhat cooler position, similar to the shelf of a warm greenhouse, close to the glass, or in a house where the temperature is such that the plants will keep growing, without being drawn up lanky and weak. By the end of March there will be a number of young seedlings, about 1½ in. high, ready for pricking out. For this purpose I have a gentle hot-bed prepared, on which is placed a frame capable of containing about 500 plants. The plants are carefully pricked out, and the frame is kept rather close, and shaded from bright sunshine for several days; when the shading is removed, air is given, and by the first week in May they are ready for planting out in the trenches. The seed for the late crop, to be in use at Christmas, and to furnish a supply onwards for several months, I sow the first week in April. These are ready for pricking out by the early part of May. A hard piece of ground is selected, over which is spread well-decomposed manure to the depth of 2 in., on the top of which a little soil is spread about 3 in. thick, and the plants are transplanted, and attended to as regards shading and watering. In June they are planted in the trenches, which are about 7 ft. from centre to centre, and three rows of Celery are planted in each trench, the spaces between the trenches being occupied by Peas, Potatoes, or Lettuce, as occasion may require. The first crop will be in good condition in September, and the last sown plants will keep up the supply through the latter part of winter, and on into the spring. There is a great advantage in pricking out the plants on a bed prepared with a hard bottom; they form no tap-roots, and, when lifted to be placed in the trenches, they move with a dense and compact mass of fibres, which receive no check, and do not predispose the plant to run to seed. I always take great care in earthing-up Celery, placing the soil carefully round the plants with the hands, and it is well to be careful not to smother the heart by earthing it up in the young state. Most localities have their favourite sorts of Celery, and this renders it unnecessary to say much about them. This season I am growing Leicester Red, Sandringham Solid White, and Hooley's Conqueror.

There are other plants used occasionally with salads, such as Tarragon, Burnet, Chervil, and Mustard, plenty of which may be had by sowing a little seed occasionally, according to the demand. Burnet and Tarragon are propagated by division of the roots. I have now exhausted the list of plants used for salads, except the Australian Cress, which is a valuable addition to our Cresses. Q. R.

PLATE XXXIII.

LILIUM KRAMERI.

(Drawn by Mrs. G. F. WILSON).

This beautiful Lily was, together with other fine varieties, received by Dr. Wallace, of the New Plant and Bulb Company, Colchester, from his collector, Mr. Kramer, from Japan, in the winter of 1871-72, accompanied by drawings of three kinds, one white, another the same size and colour as our illustration, the third similar also in colour, but much larger in flower and broader in the petal. This Lily was at first received with incredulity, the drawings were considered exaggerated, and it was expected to turn out only a poor form of L. auratum. Subsequent experience has, however, fully vindicated its fair fame as one of the most delicate and beautiful species of the Lily tribe. It is believed to grow wild in Japan, on the hills at a level of from 3000 ft. to 4000 ft. above the sea, and ought, therefore, to be perfectly hardy in this country. The bulb bears the long journey to Europe badly; until last winter, few importations of it have arrived otherwise than rotten. The bulb is small, resembling a small L. auratum, but with softer and flatter scales. The young growth also resembles that of L. auratum, but it is more slender, both as to stem and foliage; the latter is scanty, narrow, and pointed; the stems are devoid of leaves on the lower part. It flowers out-of-doors in July; the tint varies from white or white suffused with a lilac-blush to a rich purple, some of the deeper tinted forms being very beautiful. It ought, when established here, to be as hardy as in its native habitat. A very fine specimen of L. Krameri album, with three flowers, imported last winter, has recently been in blossom at Colchester. These forms, when fully established, ought to produce double or treble the number of blooms just named. There has been considerable difference of opinion as to whether this plant is really a species or only one of the many distinct hybrids or seminal varieties which Japanese gardeners so well know how to originate and perpetuate. Mr. J. G. Baker, in his review of the genus Lilium, suggests that it is an hybrid between L. japonicum and L. speciosum, but neither flower nor habit shows the least trace of the last-named species. Mr. T. Moore, in some remarks which he has made respecting this Lily, suggests that it is an hybrid between L. auratum and L. japonicum, if indeed it be not a mere selection from L. auratum itself; and adds that it is not clear whether L. Krameri comes from wild habitats or from Japanese gardens. Three forms are known, but Mr. Kramer, who sent the plant to this country from Yokohama, says there are "many more startling varieties" of it. Whether, however, it is a Japanese garden hybrid or a pure wild species, matters but little, since there can be no doubt that it is one of the most delicately beautiful of all Lilies, and well deserves the most careful culture.

AUG 12 1876

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KRAMER'S JAPAN LILY. (LILIUM KRAMERI).

MY DIARY FOR SEVEN YEARS.

By J. DENNING.

August 14.—*Sowing*—Radishes; also Snowball and Stone Turnips; Incomparable, Enfield Market, Imperial, Matchless, and Little Pixie Cabbages; Mignonette, 100 pots various sizes; Bath Cos, Hicks' Cos, Stansted Park, and All the Year Round Lettuces; Frogmore, Walcheren, and Early London Cauliflower; Mignonette under East Indian house for late cutting. *Cuttings* of Salvia, Gazania, and Balm put in; getting in cuttings of Pelargonium, Hydrangea, Fuchsia, and a few Achyranthes for stock. *Planting*—Sweet Williams and Rockets; layering Carnations; planting Endive under all south walls, and in front of Fig-house and Orchard-house so that it can be protected; Leeks. *Miscellaneous*—Basketing some Acinetas, putting them in Moss, rough peat, and crocks; also some Stanhopeas. Re-basketing Dendrobium Falconeri, all young roots being kept at top, scarcely any Moss being used. Potting Violets, also summer-struck Pelargoniums, Strawberry plants, and winter Cucumbers, using 6-in. pots. Tying Cytisuses; staking Salvias, Chrysanthemums, and October Raspberry canes; nailing trees and Tomatoes. Shifting different kinds of Masdevallia into larger pots; putting Cyclamens back into pit with a little bottom-heat; shifting pot Violets into their flowering pots. Syringing Gardenias every week with soap-suds for scale. Watering Carrots with strong lime-water and Broccoli with guano-water to try to kill grub. Gathering Apples and Early Anne Peach, out-door; setting Strawberry plants much thinner, plants first potted having rooted well to sides of pots; getting up Garlic. Levelling ground for July Cabbage; making a Mushroom-bed; digging early Pea land and early Potato land for early spring Cabbage; preparing some frames for cuttings; stopping Tomatoes. Burning up hedge clippings and old Strawberry plants. Giving clubbed Broccoli plants some soot, guano, and salt, watering them in. Cutting down Pelargoniums; thinning out late Melon plants; thinning latest Turnips.

Aug. 15.—*Sowing*—Cucumbers to grow in pots, also Prickly Spinach. *Potting*—Madme. Vaucher Pelargonium, for autumn; potting up double Wallflowers. *Cuttings* of Ageratum, Heliotrope, Agathæa, and Verbenas, put in in cold frame plunged in ashes; also of Golden Chain, Wensleydale, and Stella Pelargoniums. *Planting*—Wallflowers, Endive on Potato land, and July-sown Cabbage. *Miscellaneous*—Tying Peach trees in houses; putting nets up to Vineries to keep out wasps. Shifting Vandas and summer-struck Pelargoniums into 48-sized pots. Watering Celery, Lettuce, &c., and first Peach-house all over border. Taking up Seed Potatoes (Prolifics); gathering Cherries, Melons, Peaches, Nectarines, Apricots, Grapes, Apples (Transparent Pippins), Pears, Gooseberries, Currants, Cobbler's Ball Plum; cutting Lavender; pulling up autumn-sown Onions. Digging some land for spring annuals; making pit for Endive and for Bath Cos Lettuce and latest Cucumbers (five lights); earthing-up Cauliflower.

Aug. 16.—*Sowing*—Globe, Tripoli, and Strasburg Onions; Schizanthus; East Lothian and Brompton Stocks. *Potting*—Vesuvius and Dr. Lindley Pelargoniums for winter. Putting Primulas into their flowering pots. *Cuttings*—Of bedding Pelargoniums put in for the last time. Beginning to put in Salvias. *Miscellaneous*—Netting Plums. Putting Pinks in a sunny place under a wall. Gathering Peaches and Nectarines in orchard-house and Peach-house; also last dish of Strawberries. Putting Shallots and Garlic under cover. Budding Roses. Levelling ground for autumn Onions. Hoeing up Strawberries, and manuring for early Cabbage. Getting wall sides ready for Endive. Cutting Laurels over a second time. Looking over Orchids for thrips. Top-dressing Calanthes, using loam, leaf-soil, and cow-manure above rim of pot. Clipping Yew hedges.

Aug. 17.—*Sowing*—Hardy annuals and Beans for first crop in pots. *Potting* off some late-sown Cinerarias; also Pinks. *Cuttings* of Hollyhock and Senecio put in. *Miscellaneous*—Planting Antirrhinums. Pricking out Stocks and Sweet Williams. Tying Dendrobiums. Netting some bunches of Grapes. Shifting the largest Cinerarias for early bloom, some Musk seedlings and Bouvardias. Watering flower garden; early and late Peach houses. Gathering a few Jargonelle Pears. Lifting Ashtop and Handsworth Potatoes for seed. Giving half a row of Celery a final earthing up; giving one row of Celery a "next to last" earthing up. Running soil down to two more rows. Earthing up "next to last" sown Cucumber. Making a pit ready to receive Cinerarias; making a bed for Violets; making ready winter Cucumber house. Mowing woodland walks. Oiling with paraffin American blight on Apple trees. Thinning late-sown Carrots and Turnips; also last-sown Mignonette, and taking old flowers off in order to encourage them to grow again.

Aug. 18.—*Sowing*—Chærophyllum bulbosum, Radish, and also Spanish Radish, Silene pendula and S. p. alba, Nemophila insignis and Pansy; likewise last Mignonette. *Potting*—Masdevallias and Odontoglossums. *Cuttings*—of Nasturtium, Gazania, Petunia, &c. put in. *Planting*—July-sown Bath Cos Lettuce. Layering Strawberry runners for planting; also Chrysanthemums and Anne Boleyn Pinks. *Miscellaneous*—Pricking off the latest-sown Cinerarias. Getting Peach trees tied. Tying up Stephanotis, Allamandas, and Roses. Shifting Intermediate Stocks into 6-in. and 8-in. pots. Re-arranging conservatory. Watering last-planted Celery and Vegetable Marrow. Gathering Denniston's Superb Plum, Sugar-Loaf and Oslin Pippin Apple. Making land ready for Bath Cos Lettuce, July-sown Cabbage, and Endive; also for Leeks and Wallflowers. Top-dressing with live Moss Orchids on which Moss is decayed. Putting manure in for Mushroom bed. Getting all boilers ready for work again. Putting in ridge for winter Cucumbers. Mowing off one bed of Parsley to get it to grow for winter.

August 19.—*Sowing*—Beck's Gem Pea. *Potting*—Scented-leaved Pelargoniums. *Cuttings*—Of Veronicas, show Pelargoniums, and a few more Mangles' variegated put in. *Miscellaneous*—Layering Hautbois; staking all dwarf Mignonette that is ready; moving Primulas from behind wall to pits; putting late Cockscombs into Melon pit; gathering some Jargonelle Pears, Peaches from latest tree, Apricots, and Apples; preparing ridge in winter Cucumber pit, consisting of one part leaf-soil and two parts loam; turning Mushroom manure every day; beginning to be more careful to pull up shading from Orchids when cloudy; earthing-up late winter Greens; thinning out last-sown Turnips and latest-sown Mignonette; stopping straggling shoots on early Vines; exposing Peaches out-of-doors; taking runners off potted Strawberry plants; taking off breastwood from wall-trees.

Plants and Flowers in pots ready for house-decoration:—

Justicias	Agrostis pulchella	Moss Roses	Musk
Mignonette	Heliotrope	Stocks	Blue Cornflower
Bouvardias	Zinnia elegans	Calceolaria	Sweet Pea
Scarlet Geranium	Carnations	Fuchsia	Lilium auratum
French Geranium	Clove Carnation	Hydrangea	,, lancifolium
Double Geranium	Roses	Lobelia	Dianthus Hedwegi
Scutellaria Mocciniana	Gardenias	Pelargoniums	Calliopsis
	Pansy	Cockscombs	Lilies
Godetia in variety	Spiræa	Petunia	
Balsams	Stephanotis	Myrtle	

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Striking Cuttings.—Many find considerable difficulty in striking Tricolor Pelargoniums. The want of success with these, as compared with other kinds, is attributable to the cuttings not being put in at the most suitable time, and managed in the way best calculated to insure their rooting. There is no way in which they do better than when put in about the middle of the present month. Inserting half-a-dozen cuttings, each in 6-in. pots, placed in the open-air right in the full sun, drain the pots in the usual manner, and fill them up with ordinary loam sifted, to which add one-half sand; take the cuttings off and prepare them for putting in by removing the bottom leaves, leaving three or four at the top, according to the size of the cutting, remembering that the larger the cutting, provided it is not too rank in growth and soft, the better plant it will generally make in a limited time. Before putting them in allow them to lie on the potting-bench for a day, as is usual with the ordinary varieties, so as to allow the base to dry up a little. When they are inserted press the soil tightly to them and give a sprinkling of water. The principal advantage in striking these variegated kinds of Pelargoniums out-of-doors at this season is that they will bear a good deal more water without danger of rotting than can be given to them at a time of the year which necessitates their being struck in pits or frames either with or without artificial heat; the great point gained is that they do not lose so many leaves, that they root quickly, and that they make strong plants before autumn, much better calculated to stand the winter than would otherwise be the case. The earlier in the summer suitable cuttings can be got the better they will succeed managed in this way. A dozen plants rooted thus early and kept on growing slowly through the winter, will, at bedding-out time, fill as much space as double the number of late-struck small plants. Amateurs who have not had much experience in cutting-striking, will find it an advantage at this time to put in cuttings of all other kinds of bedding Pelargoniums which they grow. Put in now, not one-fourth the loss and disappointment will be experienced which attends later-rooted stock, and where there is a deficiency of room they may be left without potting off until the beginning of March. Verbena cuttings should be got in at

once; I have always found these to strike best at this season in a cold frame facing the north, and kept moderately close: choose the softest cuttings that can be got; these are generally procurable near the base of the plant, and should be taken off before they have formed flowers, in the way that the extremities of the shoots will have done, and in which condition they root very slowly, or not at all. The cuttings ought to consist of about two or three joints of the extreme end of these soft shoots, putting them in in 6-inch pots, filling them up to within an inch of the rim, and placing an inch of sand on the surface; a dozen cuttings may be put in each pot, keeping them constantly moist, and giving no more air than will just keep them from damping, but not enough to cause them to flag, for, unlike Pelargoniums in this respect, if left to droop much, they rarely succeed. The usual bedding varieties of Lobelia should also now be put in, selecting and treating them similarly to Verbenas; where a sufficient stock of spring-struck Verbenas and Lobelias has been kept in pots to produce cuttings in the winter, these must not be allowed to suffer for want of root-room, nor allowed to become a prey to thrips, red spider, or mildew, to all of which the Verbenas are especially liable; neither should they be permitted to produce many flowers, or the effect will be their getting into a hard stunted state, which will much impair their capabilities in regard to producing cuttings. The fine old Lobelias of the cardinalis section are not now nearly so much grown as they deserve to be; if these and some other similar habited subjects were used in sufficient number amongst bedding plants of more procumbent habit, much of the objectionable formality of the latter would be avoided. They are easily grown, easily wintered, and most effective in appearance. There are now a number of fine hybrids varying much in the shade of their flowers, and also in their size and substance. It is well for those who purchase new expensive varieties of Dahlias to strike a few cuttings of each at this time, as it sometimes happens that the old roots perish through the winter, in which case cuttings struck now will supply their place, and will often produce cuttings in spring more freely than the larger roots; they should be taken off at a joint similarly to the spring cuttings, inserting them singly in 3-in. pots with a little drainage in the bottom, and filling with fine sandy soil, with a little sand on the surface; keep them under bell-glasses, or in the garden frame, shaded from the sun, and sufficiently moist to prevent their flagging. In this way they will root through the pots, and not require more room, as they will get sustenance from the roots that thus get into the soil through the little pots, the latter getting quite filled with the tubers. When the tops are ready for removal in the autumn, the pots with the roots in them will merely need putting in a dry place out of the reach of frost.

Early Potatoes.—The tops of which through the late intensely hot weather have died down sooner than usual, should at once be taken up, as nothing is gained by leaving them in the ground after they are ripe; on the contrary, there is danger of their super-tuberating, which they will be liable to do should they remain out until heavy rains come. My own practice for thirty years with such of the early varieties as were intended for planting has been to take them up as soon, or a little before they were ripe, to pick out the middle-sized ones and lay them on the ground, fully exposed to sun and air, till they were of the darkest green colour, afterwards putting them thinly in shallow boxes, placed until planting time in the spring in a building where they can get a fair amount of light so as to keep the sprouts which they make growing slowly, short, and very stout. The light is never excluded from them from the time they are lifted till they are planted unless when it is necessary to protect from frost. For some years I have never used any manure for Potatoes except soot, salt, and lime, in some cases when the land is poor assisted by a sprinkling of guano sown broadcast over the ground before it is dug previous to planting; the result has been that even in the worst years of the disease I have never lost more than five per cent. of early and second early sorts. I simply notice these matters now from the necessity of treating Potatoes that are intended for planting from the time they are taken up in a way that will prevent the tubers from being subjected to the weakening, exhausting treatment they too often undergo previous to planting. The voluminous correspondence that is yearly written on the management and cultivation of the Potato—much of it opposed to the results of the best practice of the most observant growers—is so perplexing to amateurs that they are frequently completely at a loss what course of treatment to follow to afford a reasonable chance of securing a crop in seasons when the disease is prevalent.

Turnips.—The ground that is cleared from Potatoes, Peas, French Beans, and similar crops, should at once be sown with Turnips; not a day should be lost in getting the seed in, as upon this depends the crop getting to a useful size before growth is stopped by the cold weather.

Cabbage.—Make another sowing of Cabbage. Where a serviceable crop is required there is nothing better than Enfield Market to come in after any of the smaller more early kinds. Some object to its being too large; this objection may hold good if it be allowed to attain its full size, but the best way is to commence cutting it early enough, and there is no variety I have ever grown that makes such a quantity of useful sprouts after the first cutting; to assist the production of these, from the crop that has already been cut the old leaves should be cleared off the stools: by this means slugs and caterpillars that harbour in them are got rid of. The ground should then have a good soaking of moderately strong manure-water.

Radishes.—Of these a sowing should be made every three weeks now in rich ground; these will be much better in quality than such as have been coming on through the middle of summer. Where Mustard and Cress are required they should be sown every ten days; these, with Radishes and Lettuce, must, to have them fit to eat, be regularly well watered, without which it is impossible to have salad of good quality. I have heard some gardeners speak against the necessity of watering in the kitchen garden, asserting that by deeply trenching, sufficiently manuring and mulching, watering was not required; but the chief reason why the productions of the French salad growers are better than ours during the summer months is that they are continuously supplied with copious applications of manure water so as never to allow the crop, from the day the seeds vegetate until it is gathered, to want moisture.

Celery, more than most crops, will now need to be well soaked with water; if the varieties grown are such as are at all inclined to run to seed, they are sure to go off in this way in a season like the present if not watered before the plants flag. After a good soaking 1 in. or 2 in. of soil may be put to even the late crops; it will prevent the roots, which lie close to the top and are still further encouraged to the surface by watering, from being so soon dried up, and will diminish evaporation.

Late Peas should have a ridge of soil drawn on each side of the row, and within 2 in. of it, so as to confine the water, which should be applied without stint, or it will be impossible to keep them from becoming a prey to mildew. One good drenching, so as to moisten the soil down as deeply as the roots descend, will be of more service than half-a-dozen partial applications. Scarlet Runners must be similarly treated, or the produce will not only be small, but the bearing capabilities will be so far reduced that the blooms will refuse to set at all. These and all other crops will be much benefited by mulching 3 in. thick with littery manure; if the land be at all poor, nothing is better than to use it fresh from the stable, laying it on before the water is given; by this means the fertilising elements of the manure are immediately washed down to the roots of the crop, upon which they at once act beneficially.

Stoves.

The great heat we have lately experienced will cause a rapid increase in the numbers of all insect-pests, and unless means be at once taken to keep them down their destruction will be a work of some considerable difficulty. The worst to contend with are mealy bug, as they insinuate themselves in every crevice about the plants, and even in the ties and sticks supporting the same. There is no better way to eradicate these at this season than to use a soft sponge and give them a thorough hand-washing, as any mixture made sufficiently strong to destroy these marauders would be sure to injure the leaves in their present tender state, if not to destroy the plants altogether. The same remark applies with less force to the turtle or brown scale, but as they do not increase at anything like the rate of mealy bug, it is a much easier matter to hold them in check, or even to get rid of them altogether. Thrips are more readily dealt with either by dipping the plants in strong Tobacco-water, or by giving the house two or three good fumigations in quick succession; but where the plants are in pots, and of moderate size so as to admit of being readily handled, the former method is the best, as the Tobacco-water not only destroys the living thrips but those in embryo as well, especially if made more penetrating by having a small lump of washing soda dissolved in it, or an ounce or so of Fowler's Insecticide added to each gallon of water. This will soak through the varnish-like covering with which the thrips' eggs are coated over, and so carry the strength of the Tobacco in with it, thus making much cleaner and more durable work than the smoke alone would do. In cases, however, where large plants, roof climbers, &c., are infested with these pests, the latter mode of extirpating them must be resorted to as the only practicable means of getting rid of such troublesome enemies. Those who wish to be clear of the above should assail them the moment they show themselves, for if left alone for only a short time during the present hot weather they do a great amount of injury, and entail a vast deal more labour and time

in the end. Where roof climbers are grown, all superfluous growth should now be cut out, so as to admit plenty of light and air to the plants beneath, to aid them in maturing their growth. No stove, however small, should be without a plant of Bougainvillea speciosa, which can either be grown in a pot or planted out, according to the space that can be allotted to it. Whichever it may be, the roots should be entirely under control, and the top so trained as to be near the glass and fully exposed to the sun, without which it is impossible to ripen the wood properly, and unless this be thoroughly matured they seldom produce much flower. To assist in this ripening process, the plants should now be kept moderately dry at the roots, increasing the same by degrees till flagging takes place, as it is only rather severe drying that will cause them to produce a profusion of those lovely mauve-coloured leaf-bracts that renders them so exceedingly attractive and of such great value for cutting. By getting them to rest early, they may be had in bloom much sooner than if they are allowed to grow on and ripen off naturally in the autumn; and as the coloured leaflets last for some months, rather improving by age than otherwise, it is very desirable to have them in as soon as possible. In cases where the growth of these has been allowed to become at all thick, the strongest and most sappy-looking pieces should at once be cut away in order to admit light and air to those of medium size, which alone produce flower in a free, satisfactory way. The robust, free-growing habit of B. glabra, when planted out, renders frequent attention necessary to keep them properly thinned and regulated, without which they soon become a confused mass, and are then most difficult to separate or get in anything like order again, the hook-like thorns lacerating the leaves of the shoots left on, rendering them shabby in appearance. The supply of water to this variety should now be somewhat diminished, but not to anything like the extent of what is advised for the other, as B. glabra will continue to grow and produce flowers till near Christmas, if in a suitable situation. Any of this variety in pots that have been kept back for late blooming should now be afforded plenty of light and air, and liberally assisted by giving them plenty of manure water; as, when confined to such a limited feeding ground, their free-flowering habit renders help in that way absolutely necessary to maintain the plants in health and keep the leaves a good colour. Allamandas that have been loosely trained or slung to the rafters with a view of transferring them to suitable trellises for removal to the conservatory, or for other uses, should now be carefully tied down by bringing the shoots into position gradually so as not to give them too sharp a bend, the effect of which would be either to break them off or to stop the flow of sap as to starve the flower-buds. Any plants of these that were got into bloom early and are now becoming exhausted, should be placed in light, sunny positions in the stoves, where they can have plenty of air to assist in maturing their wood. By getting a portion of the stock early to rest, the same may be started immediately after the turn of the year, so as to get them in bloom at a time when their large, showy flowers are most valuable. Cuttings struck in the spring may still be grown on by giving them a shift into larger pots and keeping them in a growing atmosphere where they can get plenty of light to prevent them from drawing.

Achimenes.—These should have every attention as they go out of bloom to assist them in forming and ripening their tubers; the best place in which to treat them at this season for that purpose is a pit or frame where they can be kept moderately close and shaded, in addition to which they should be freely syringed overhead that the leaves may be maintained in a fresh, healthy condition. Achimenes are too frequently stowed away directly they cease flowering or become the least shabby, and water entirely withheld from them, a course of treatment the reverse of what they require, as it is just at that time assistance is needed in rendering the drying-off process gradual and natural. By affording the first batch a little extra attention they will form an abundance of fine, large tubers, superior in every way to any that can be obtained from those now coming on, which may therefore be discarded as soon as they have discontinued blooming.

Gesneras, such as cinnabarina, exoniensis, and zebrina, are among the most useful autumn and winter-blooming plants, independently of which the great beauty of their rich velvety-looking leaves makes them quite worth growing for decorative purposes. They delight in a rich, vegetable soil, such as leaf-mould and peat, which may be used in the proportion of two-thirds of the former to one of the latter, or the peat may be substituted by adding a less quantity of rough fibry loam. This must be kept free and open by using some sharp clear sand in order that the great quantity of water they require while making their growth may pass readily through. In re-potting any of these see that the old ball is not disturbed any more than is necessary for the purpose of removing the crocks, as most of the fibre they make will be found clinging around the insides of the pots.

Sericographis.—Plants of this should now receive their final shift, and be kept growing on by affording them a genial atmosphere, which may be brought about by copious syringing just before clearing the house or pit in which they are growing. Keep the plants well up to the glass, so as to induce a close, firm, short-jointed growth, without which they do not produce flowers freely. Sericographis, like most other stove plants, is subject to mealy bug, which if not seen to, will soon cripple the tender points of the young shoots and stop them from blooming. The plants should therefore be thoroughly looked over to see if any have effected a lodgment, and if so, they should be carefully removed by using a small soft brush or feather.

Euphorbia jacquiniæflora.—Give plants of this a light, airy position near the glass, and stop any strong shoots that appear likely to take the lead, which will cause them to break back and afford good sprigs for cutting. Any that are at all pot-bound will be greatly benefited by giving them an occasional watering with liquid manure, which may also with advantage be applied to most of the stove stuffs now being grown on for winter blooming, especially to that portion confined in small pots to be used in vases for table decoration or similar purposes.

Eucharis amazonica. — Valuable as this is at any season, it is never more welcome than during the autumn and winter months, a time of year when such choice blooms are doubly appreciated. Fortunately they may be had at that season almost as readily as at any other, provided there be the necessary convenience for growing them and a good stock of plants to work with. Where this is the case, a portion of the plants should be always resting and others coming on in different stages, so as to keep up a constant succession of flowers for cutting or other purposes. Those intended for blooming during October, November, and December should now be at rest in a cool house or pit, where they have only had just sufficient water afforded them to keep the leaves alive and fresh. If a portion of these be transferred into brisk hothouse heat and kept well supplied with tepid water, they will soon commence to throw up their flower-spikes, and when these are cut the plants should be grown on for a time before they are again put to rest. Owing to the rapid way in which the bulbs increase in number, frequent division and re-potting are necessary, in order to renew the soil and make a separation of the large flowering roots from those of smaller size, which can either be discarded or kept for stock. The soil that suits them best is rough lumps of peat, leaf-soil, and a sprinkling of rotten manure, to which should be added sufficient sand to keep the whole porous and open, so that the water may pass freely through. To aid this the pots must be thoroughly well drained by placing at least 2 in. of crocks in them, over which some half-rotten leaves should be scattered, to prevent the finer soil from running amongst them and filling the interstices. Water somewhat sparingly for the first week or two till they get fresh hold of the soil, and then gradually increase the supply as the pots fill with roots, after which, if the heat be sufficient, they can scarcely have too much, either at the roots or overhead, where a good syringing is always acceptable. Pancratiums, such as P. fragrans and P. rotatum, are almost equally valuable, and may be had in bloom at different periods of the year by growing on and resting a portion of the stock in succession. These delight in a soil composed principally of fibrous loam, enriched with some mild manure, such as sheep droppings that have been laid aside for a time.—J. Sheppard, *Woolverstone Park.*

Orchids.

The whole of the heating apparatus should now be thoroughly examined, and any alterations and improvements which experience may have suggested should be done. In hot-water pipes all leaky joints should be stopped, and in places where the pipes have sunk below their proper level they should be carefully raised and firmly secured; a gradual rise to the extreme point should be maintained on the flow from the top of the boiler, and a gradual fall on the return to the bottom of it; the piping should not be allowed to rise or fall more in some places than in others, but whatever inclination is given it should be the same throughout, for on this mainly depends the proper flow of the hot water. Sudden dips in the pipes, such as we often see in doorways, should be avoided if possible; the pipes should in all cases have a small air-tap at the highest point on the flow, and this should be opened while the pipes are being filled (and once a week afterwards) to allow of the escape of air, and the free passage of the water; the valves for regulating the temperature of the houses should be oiled and put in working order. Every boiler ought to be fitted with a screw plug or tap in front at the bottom, by removing which periodically a quantity of water may be run out, which will bring with it the sediment which collects even in the best constructed boilers, and which seriously interferes with the heating, and often in cast-iron boilers causes them to crack at most inconve-

nient times; by the proper use of this simple contrivance a boiler may be made to last good twice as long as it would without it, and yet its value is often not recognised by boiler-makers; any skilful smith, however, can make the addition. The fire-bars should also be examined, and if cast ones, those which have been burnt should be removed and replaced by new ones; if hot-water bars, they should be scraped. The flues should be cleaned and repaired, and the whole apparatus put in proper working order; by attending to these matters now and by doing the work thoroughly, serious loss and much trouble may often be averted. While such work is in progress, the warm houses, the fire in connection with which has been let out, should be shut up earlier than usual, and the damping down late in the afternoon should be omitted.—James O'Brien.

Kitchen Garden.

We have at length been favoured with rain, which was sadly wanted, as all kitchen garden crops, early Potatoes excepted, have been languishing for the want of it. In this district early kinds of Potatoes have been lifted, and are a clean, though not an abundant, crop. Late kinds, I fear, will be seriously injured by supertuberation, so that where crops of these are anything like approaching ripeness I would strongly recommend lifting them forthwith. As yet, I have not observed the least trace of the true Potato disease, though what is known as the "curl" is pretty general in gardens round here, especially among American varieties. There are three kinds of vegetables which at this period demand especial attention, viz.:—Winter Spinach, winter Turnips, and Onions. The first should be sown immediately. It may be sown as late as the beginning of next month with fair prospects of success, but the present is the best time, unless we knew that the autumn will be mild and open, and then it might be well to defer sowing for a week or two. As regards Turnips, it has been a matter of some difficulty to get them good this season, but now they will be likely to do well, as the ground is cooler than it has been and the fly rarely attacks the autumnal sowings. The only variety which we sow at this date is Chirk Castle Black Stone, being one of the hardiest, and also one of the best quality in almost all soils. Wood-ashes or soot incorporated with the soil when digging are the best manure for Turnips, and a dusting over with the same as soon as the seed is up is a sure remedy for fly. Onions of the White Tripoli and Giant Rocca section should be sown immediately in drills a foot asunder; and if ground be no object, sow where they are to stand permanently, but if ground be scarce, they may be sown thicker, and transplanted in the spring. The finest Onions, however, are produced when well thinned, and allowed to remain where sown. The ground for this crop cannot well be too rich or too deep; that which has produced the Peas will be a safe position for them. Cauliflowers: Early London, Dean's Early Snowball, and Walcheren, should be sown now on a south border easy of protection to stand the winter. As soon as large enough to handle prick out some in frames to insure a supply of plants in case of a severe winter. Some sow in frames, but the plants are never so sturdy as when sown in the open border and pricked off into frames when ready. It is on this sowing we depend for our best as well as earliest supply of Cauliflowers during the whole year. Thin out the seedlings of Lettuce and Endive, and sow in quantity such sorts as the Black-seeded Bulb Cos, All the Year Round, Stanstead Park, and Hardy Hammersmith. Sow Radishes, Turnip-rooted kinds, and the Black Spinach; and to all other small saladings attention should be paid, in order that the supply may keep pace with the demand. Stake late Peas and summer Beans, earth up tall Kales and Brussels Sprouts, and continue to plant them as ground becomes vacant. Gather French and Broad Beans when ready, even though they are not required, as they tend to prematurely exhaust the plants; the latter kind may be kept in bearing for a very long time if not injured by overcropping, and if it be well supplied with water and mulchings. A portion of the earliest Celery may now be earthed up. As a rule, early earthing up is not desirable, and it should only be done to get a supply blanched for use early; growth is much finer when allowed without check, besides which much labour is saved when it is large enough to be earthed up once for all. Weeds will grow quickly again now that rain has come, therefore in bright weather keep the hoe busy, and so kill weeds, and accelerate the growth of the crops at the same time.—W. Wildsmith, *Heckfield*.

Trees and Shrubs.

Continue to clear away Furze, Brambles, Bracken, or any other rank undergrowth from young plantations; whenever the latter are getting thick and crowded thinning should be commenced, breathing room and a free circulation of air amongst young trees during their earlier stages of growth being of the greatest possible advantage to them. The thinning need not necessarily be severe; on the contrary, I would rather recommend thinning sparingly and often; the margins or outsides of plantations may, however, be more freely thinned, so as to encourage a healthy and strong branch growth to withstand cutting winds, and be a means of protection to the interior of the plantation. As a proof how rapidly plantations grow when they get a good start by using strong vigorous plants well rooted, I may mention that I am now thinning a plantation the second time that has only been planted eight years; the trees are now from 15 ft. to 18 ft. high. Now is the proper time to commence pruning Hardwoods; all side branches that are gaining too much strength, and that are growing out of proportion, should be foreshortened, and duplicate leaders, if any, may also be pinched back. The trimming of hedges and Laurel banks, that are usually done twice a year, may now have attention in that way. Keep recently-planted young hedges clear of weeds; after hoeing or pointing over the surface, a thick mulching of Grass or rough litter spread over the roots will benefit them at this season by keeping down weed growth, and preventing the plants from suffering through drought. In the nursery the budding of ornamental trees may be commenced; Elm seed should be sown; pinch off contending leaders on Conifers, and any straggling branches that are growing out of due proportion may be restrained. Clean all superfluous shoots off the stems of young hard woods, and stake them if necessary; the destruction of weeds must not be neglected, although the late scorching weather which we have experienced must have rendered that kind of work comparatively easy.—G. B.

THE FLOWER GARDEN.

DAHLIAS IN POTS.

We are possibly near the return of Dahlias into popular favour. True, they have little or no scent, and it became the proper thing to call them coarse. But things are mostly coarse or fine by comparison. Dahlias may be coarse contrasted with the finest Quilled Asters, but place them near the Sunflowers and they are fine. Much also depends on the stand-point. Carried in the hand or brought near the eye, even bouquet Dahlias may be characterised as more or less coarse; but place them rather far off, marshal them into a boundary line, back them up against a high wall, and the coarseness merges into showy grandeur. In size, form, and colour the flowers of the Dahlia are without a rival. What towering masses of petals piled one upon the other till the forms are built up into three-quarter spheres, perfect models of symmetry and fit, displaying almost endless modifications of form! And then as to colour—in what family of flowers shall we find such spotless whites, soft yellows, brilliant scarlets, bright pinks, rich purples, and glowing golden-orange flowers as among the Dahlias? And what matchless meltings of one colour into another, the petals being tipped and painted with contrasting or harmonising shades innumerable, so that in some flowers it is almost impossible to describe the colours more correctly than to say that in them many beautiful shades mingle and melt into each other. The best-sized pots for Dahlias are the 10-in. or 12-in. These sizes will grow the finest and strongest varieties to great perfection. If not divided in the spring some of the finer roots may need reduction, otherwise the roots may become almost too large for the pots. The tops, too, are better thinned to from one to three or four stems. Most of the best growers reach their highest results with one-stemmed plants, and such plants are most artistic for pots, whether grown up with standards, a form well adapted, though seldom used for Dahlias either in or out of pots, or dwarf or tall bushes. When Dahlias in pots are used for making screens, the side stems may be left. The Dahlia is a gross feeder and a vast grower, therefore it must have a rich soil. Smashed bones and the parings of horses' hoofs form capital drainage. The soil should consist of rich, mellow, fat loam, still further enriched with at least a third of well-rotted manure. In the open many have great faith in leaf-mould, but there is no room for it in pots; the root-run being so limited it must be at once rich and durable. To insure the preservation of the soil the surface of the pots should be well mulched over with, say, 2 in. of manure. Through this all water must pass on its way to the roots, and of course it gets enriched on its passage. After the plants are in full growth, and especially as soon as they begin to show flower, nothing but manure water should be given them, and if the drainage be ample—about an inch and a half—it is difficult to give them too much from July to the end of August. As a preventive to thrip, and an encourager of a cleanly growth, overhead sprinklings twice a day are also of the greatest importance. As the flowers reach perfection this overhead sprinkling must be managed with caution; some of the more delicate colours get tarnished with wet, and the sun also burns

some of the darker flowers if it shine upon them in a wet state. A moderately sheltered place is best for Dahlias. They are very brittle, and easily broken by the wind, and should, therefore, not be fully exposed to it if it can be avoided. The plants should have their final shift in June or July, and be either securely staked at the same time, or fastened to a trellis, fence, or wall. If the former, caution must be exercised not to stake the root through in providing a holdfast for the head of the plant.

As the plants grow they need to be carefully disbudded, pruned, and trained. To have fine flowers many of the buds should be thinned out. More than one-half of the lateral shoots should also be removed to concentrate more force into those that remain, and to give greater size and substance to the flowers. The greatest enemy of the Dahlia is the slug in a young state and earwigs in the flowers. The latter seem literally to feast on Dahlia blooms, and often provoke gardeners beyond all endurance. For slugs a sharp eye and a few nocturnal visits to the plants, and traps of Cabbage leaves or cold Potatoes are the surest remedies. The earwigs are often woolled off by tufts of cotton wool being placed around the flower-stems. Traps made of bits of Reed thrust among the leaves and stems of the Dahlias also prove too much for the curiosity of the earwigs. They creep in to explore or rest, and can be blown out into a hot bath in the morning. By perseverance in these simple methods Dahlia pests are soon got rid of. To develop or conserve the bloom of some of the finer sorts shade is needful from 10 a.m. to 4 p.m. Circular boards, covered with rims of pasteboard about 4 in. deep, form the best shade for choice flowers. But such contrivances belong rather to the mystery of exhibiting than to the simple growth of Dahlias in pots for ornamenting villa gardens. It is, however, quite possible to grow show Dahlias in pots, and hence the hints about shading may be useful.

As to varieties it may be said that the best for culture out of pots would also be the best for pots. It may, however, prove useful and interesting to give the names of a few of the more showy and beautiful varieties. Dahlias now divide themselves into four well-known classes—bedding, bouquet, fancy, and show. The bedding Dahlias only grow to the height of from 1½ ft. to 2½ ft., and are most profuse bloomers. Two of the best whites in this class are alba floribunda nana and White Bedder. In scarlet or crimson, Rising Sun, Scarlet Gem, and Fireball are specially good. Yellow or orange—Cloth of Gold, Orange Bower, Pluto. The Pet, Dwarf Queen, and Gem of the Dwarfs are three more very distinct and striking bedding Dahlias. The bouquet Dahlias have small, beautifully-formed, often very richly-tipped or variegated flowers, the blooms being so small as to adapt them for the furnishing of vases, or even the forming of bouquets.

The following, among others, are very showy and striking:—Burning Coal, yellow, with scarlet tip; German Daisy, rose and white; Fireball, bright orange red; Guiding Star, pure white; White Aster, good; Little Nigger, blackish crimson, very fine; Little Dorrit, rosy amaranth; Goldfinch, bronze centre, golden yellow; and Pure Love, beautiful, rosy lilac.

Show varieties.—Flag of Truce, white, sometimes tipped lilac; Anne Neville, large white; Duke of Edinburgh, very fine, deep yellow; Fire King, yellow, with bright red edges; James Cocker, purple, fine; John Standish, large red, very good; Mrs. Sinclair, rose, tipped with purple; Mrs. Stoncomb, pale yellow, tipped with fawn; Ovid, fine puce; William Lucas, yellow, edged with puce; Thomas Goodwin, dark maroon; and Florence Pontin, white ground, tipped with crimson.

Fancy Varieties.—Butterfly, scarlet, brown and buff, very pretty; Charles Perry, rose, suffused with red; Empress of Austria, yellow, shaded with red, tipped with white; Fancy Queen, purple, tipped with white; Gipsy, rose, striped with maroon; Hero of York, crimson, shaded puce; Mazeppa, scarlet, striped with crimson; Richard Dean, yellow-flaked crimson; Rev. J. B. Camm, yellow, flaked red; Galatea, yellow, striped maroon; Ebor, chocolate, striped maroon; scarlet, tipped white. Perhaps these fancy varieties are really the most beautiful and useful for pot culture. The richness of colouring and infinite variety of shades must be seen to be either understood or appreciated. The culture of Dahlias in pots is a cheap as well as a pleasant hobby. Good flowering plants of all these we have named can be had at from 1s. to 2s. each. It is novelty that commands high prices in Dahlias. A new variety of last year would cost as much or more than a dozen equally good or better varieties of the year before.—"Villa Gardener."

Mutisias at Bitton.—Mr. Hemsley is quite mistaken in supposing that M. decurrens has disappeared from our gardens. It is in fine flower here now, and I know of several places where it is growing well. He is also mistaken in supposing that M. Clematis is not in cultivation. I have it, and he will find it on sale at Osborn's, at Fulham.—H. N. Ellacombe.

A STATELY AROID.

(AMORPHOPHALLUS RIVIERI).

This comparatively new introduction to our gardens is one of the finest of all the species belonging to this singular genus, and may be grown either as a pot-plant for greenhouse or room decoration, or for planting out on sheltered positions on the lawn during the summer months. It will be found to succeed best in a deep rich soil, and, when growing, it requires a copious supply of moisture. It was introduced from China to the Luxembourg Gardens by M. Riviere, in compliment to whom it is named, and we have repeatedly seen it used with excellent effect as a sub-tropical plant in French parks and gardens, where it attains a height of from 2 ft. to 3 ft. The stems, which are stout, are dark green in colour, spotted with creamy-white or pale rose, and these are surmounted, as shown in our illustration, by dense umbrella-shaped heads of deep

Amorphophallus Rivieri.

green foliage fully 2 ft. in diameter. When the leaves decay in autumn the tubers should be dug up and treated precisely like those of half-hardy Cannas or Dahlias, *i.e.*, they should be buried in sand in a warm cellar or potting shed until spring, when they may be potted and started in heat. It may be readily propagated by dividing the tubers in the spring. We have seen this plant grown, and well too, as an indoor fine-foliaged plant, for which purpose its distinct habit, fresh green leafage, and quaintly-mottled stems, render it suitable.

B.

Salt-water v. Weeds on Walks.—Where the hoeing of walks can be easily done, that doubtless is a very good way of keeping them clear of weeds, but in many cases, from the nature of the walk, hoeing is impracticable, and weeding by hand is often so tedious, that the time spent upon it is unprofitable. Recently, to get over some hard walks that could not be conveniently hoed, and which were becoming full of small weeds, the following plan was tried—a very simple one, which has answered effectually in two ways, viz., killing the weeds and saving time:—A water-barrow was filled with water, in which was put a bagful of salt, which was pretty well shaken about in the water till it got a good deal melted; this made the water salt without allowing it to become so dirty as to stop the rose of the watering-pot. This done, the water was taken to where the operation was to be commenced, when the surface was watered with the mixture. Thus managed, a good length of walk is soon gone over, and the plan need only be tried once to prove its efficiency. Still, the work would require to be done very carefully if there are Box edgings, as if the water touch them they will share the fate of the weeds. This work can, however, be done with careful hands on walks having Box edgings with the best result. On a dry hot day merely damp the surface with the salt water. This is too much for the weeds to withstand.—M.

THE FRUIT CROPS.

METROPOLITAN AND SOUTH-EASTERN DIVISION.

Middlesex.—Royal Horticultural Gardens, Chiswick.—Fruit crops in this district are far below the usual average, with the exception of Strawberries. Apples and Pears have seldom been so scarce as they are this season; of some of the earlier varieties of Apples, such as the Keswick Codlin, Lord Suffield, Juneating's, &c., there is a moderate crop, but the later sorts are almost entirely wanting, except here and there a tree. The same remark holds good with respect to Pears—Doyenné d'Eté, Louise Bonne of Jersey, and some others, have a fair sprinkling, more especially on sheltered pyramids, &c., but they are in general an indifferent crop. Of Plums there are scarcely any, the only variety on which there is any fruit on open standards being again an early sort—Rivers' Prolific. The crop of Currants and Gooseberries is also far below the average. Raspberries promised fairly, but owing to the excessive drought they became greatly shrivelled up just as they were beginning to ripen. The crops of fruits on walls and in sheltered situations are generally good. To recapitulate, we have—1. Fruit only on the earlier sorts, which it may be assumed all flowered about the same time; 2. Fruit on walls and in sheltered places. The earlier sorts must have escaped the blast. Given more shelter and we should have had more fruit. It was the cold, continued, blasting winds of May that did the mischief.—A. F. B.

—— **Uxbridge District.**—Apricots very fine in some places, and many dropping off through the drought. Apples partial—in some orchards good, but falling very much; Keswick Codlin, Manks Codlin, Lord Suffield, and the Russets seem to have set best; very few Russets grown now; Wellingtons and Blenheims scarce. Currants good, dropping very much. Cherries very few. Peaches and Nectarines good in places; but if rain does not come to encourage growth, they will be small and inferior. Plums very few; even such kinds as Victoria and Prince of Wales, have not set so well this season as usual, and where they have set they have fallen very much, owing to the drought; in some places wall Plums are good. Figs middling. Pears have set well in many localities, but they have a stunted appearance, and are spotted, owing to the late frosts. Gooseberries are a fair crop; Lancashire varieties have done well this season. Strawberries good, but soon over, owing to the continuance of dry weather; they all came in at one time. Raspberries middling.—G. Brush.

Kent. — Eridge Castle, Tonbridge Wells. — Apples are scarce in this district except very late-blooming kinds, such as Courtpendu plat. Apricots half a crop. Cherries plentiful and good. Currants, Gooseberries, Raspberries, and Strawberries, are all very heavy crops; but they did not last quite so long as usual, owing to the great drought to which they were subjected. Figs, protected by a net for six weeks in spring, are an excellent crop. Peaches and Nectarines a full crop. Nuts plentiful. Pears on walls, late kinds, such as Joséphine de Malines, Bergamotte d'Espéren, Knight's Monarch, and Jean de Witte, a full crop; and on standards Swan's Egg, Louise Bonne of Jersey, Seckle, Beurré d'Amanlis, and Beurré Giffard, are bearing well. Plums on walls are a fair crop; on standards scarce. Damsons excellent. Our garden is 40 ft. above the level of the sea, has little or no shelter, and is fully exposed to the spring winds, but happily it escapes the late frosts.—J. Rust.

—— **Chevening, Sevenoaks.**—Apples, Pears, and Apricots, are much under the average, but good in quality. Plums are an average crop, but small. Cherries good; have been seriously affected with black fly. Strawberries and all other small fruits have been abundant and good, but small. The hot weather ripened them off very fast; therefore most of them are over now. Peaches and Nectarines do not seem to thrive well out-of-doors here, the soil being very stiff and cold.—Robert Gray.

—— **Redleaf, Tonbridge.**—The fruit crops in this neighbourhood are generally below the average. Peaches and Nectarines are about an average, all other stone fruits being scarce, except the Victoria and Prince Englebert Plums, which are carrying fair crops. Black, White, and Red Currants, are nearly an average crop, but Gooseberries have suffered much, first from the inclement weather in May, and next from the scorching sunshine which we have lately experienced; great numbers were shrivelled up by the heat and fell off, leaving but a poor crop behind. Apples certainly not half a crop. Pears, on the contrary, are nearly an average crop, but they appear at present likely to be small in size. Nuts and Walnuts very scarce.—John Cox.

—— **Tunstall, near Sittingbourne.**—Generally speaking there is a great dearth of good fruit this year. Pears on walls are particularly short. There is perhaps as good a show of Peaches as of anything, but these are much affected by the long drought. Gooseberries and Red Currants have been about half a crop; Black Currants very scarce, and have sold well. In the orchards in this part of Kent the Cherries have been a very short crop; the Amber or White Bigarreau has been our principal mainstay; the English have been particularly short. Apples and Pears are both deficient, except the more common sorts of early Pears. I should fancy really good keeping Apples will be both scarce and dear. We have also very few Plums; of Gages very few. However, I am glad, after the last good bearing years which we have had, that the trees have had a partial rest.—G. Webb.

—— **Weirton, Maidstone.** — Strawberries, which are just over, have been a very heavy crop. Raspberries small and poor, owing to excessive heat and drought. Cherries slight crops, with the exception of Morellos, which are good. Currants—Red, Black, and White, not a full crop but good for the season, and excellent in quality. Gooseberries a good crop; many, however, have shrivelled and fallen off the trees instead of ripening. Pears of all kinds are a light crop, with the exception of Knight's Monarch, which always bears well. Plums are a small crop, with the exception of the Prince of Wales; the fruit of this, however, and that of one or two other kinds, is gumming and decaying on the trees, similarly to last year, and some trees, owing to bearing heavy crops, have died back very much. Figs are not a heavy crop, the trees having suffered from late frosts in spring. Peaches are good, but Nectarines are rather thin. Hardy Grapes are a heavy crop, and look promisingly. In orchards and other plantations in which fruit is grown for market, the crops are very partial. Cherries were light but good in quality. Damsons good in some places. Apples are a small crop. Gooseberries not a heavy crop, but fine in quality. Red Currants a good crop for the season, the Dutch and Scotch are preferred, being more hardy than some of the others. Black Currants very thin; the Naples variety, being the best cropper, is grown more extensively than other varieties; Lee's Prolific is on trial, but I do not think it better than the Naples. Filberts very slight, Cobs which are taking the place of Filberts in some places, being better croppers, are good here and there. Walnuts are very thin.—W. Divers.

Surrey.—The Denbies, Dorking.—Strawberries were good but soon over, owing to the drought; Gooseberries and Red Currants very good; Raspberries and Black Currants a fair crop, but small and wanting in juice; Cherries, Morello and Florence, very fair crop, other kinds short. Apricots moderate. Peaches and Nectarines set very thickly, but owing to the cold winds that prevailed in spring, accompanied with drought and blight, the trees are in very bad health, and not likely to finish their crop satisfactorily. Plums moderate. Apples and Pears scarce.—J. Beesley.

—— **Deepden, Dorking.**—Fruit crops in this dictrict are in general below the average. Apples are, with few exceptions, a complete failure. Pears are a thin crop. Apricots, unless where well protected when in bloom, are very thin. Peaches and Nectarines are fair crops, but the trees have been badly blistered. Plums are a very good crop, some even having had to be freely thinned. Cherries a good crop. Strawberries were also good, but the later fruits were small, owing to the prevalence of hot, dry weather. Gooseberries and Currants very good and fair in quality. Raspberries about half a crop, and small. Grapes on walls very good, and free from mildew. Figs good on walls. Filberts plentiful. Walnuts scarce. The following are our best varieties of hardy fruits:—Apples, Cox's Orange Pippin, Blenheim Orange, Ribston Pippin (trees very much cankered), Adam's Pearmain, Dutch Mignonne, Boston Russet, Margil, Alfriston, Wellington, Lord Suffield, Bedfordshire Foundling, Cox's Pomona, Rosemary Russet, Mickleham Pearmain. Pears: Jargonelle, Beurré d'Amanlis, Williams' Bon Chrétien, Beurré Goubault (a fine early Pear), Beurré près d'Artois, Marie Louise (both standard and walls); the standards usually produce the finest-flavoured fruit, though not always the handsomest. Beurré Hardy is a very fine Pear, but it does not keep long. Beurré Superfin, peculiar in flavour. Duchess d'Angoulême, Williams' Duchess (a splendid Pear), Van Mons. Leon le Clerc, Glou Morceau, Urbaniste, Winter Nelis, Easter Beurré, Joséphine de Malines (a very useful late Pear), Beurré Sterckmans (well worth a south or west wall), Prince Consort, Princess of Wales, Victoria. Among Apricots Moor Park is the best, if it were not so liable to lose large limbs. The Kaisha and Breda are most useful for preserving, and they are free bearers. Of Peaches the best are Royal George, Violette Hative, Late Admirable, Walburton Admirable (the finest-flavoured Peach grown, but a shy bearer), Bellegarde, Grosse Mignonne, Noblesse, Lord Palmerston (a fine-looking Peach with about as much flavour as a Turnip), and Salway, the latest of all Peaches. Of Nectarines we have Violette Hative, Elruge, Hunt's Tawny, Stanwick, and Pitmaston Orange. Plums consist of Rivers' Early Prolific (an excellent early Plum, and a sure

bearer), July Green Gage (a free bearer and good in flavour), Green Gage, Bryanston Gage, Washington, Jefferson, Victoria (a most useful and certain bearer), Golden Drop, Diamond (a most useful Plum for preserving), Kirke's, Blue Imperatrice, Ickworth Imperatrice, and Early Orleans. Small fruits of all kinds have done well; among Strawberries the most useful were Vicomtesse Hericart de Thury, Sir C. Napier, and Sir J. Paxton.—J. Burnett.

Sussex.—Petworth Park.—Apples, both dessert and cooking kinds, are thin in most places, though on some trees there are fair average crops. Cider fruit is a heavy crop in a few places. Apricots are average crops; yesterday I gathered twenty dozen of fine fruit. Cherries are thin on standards, but on wall trees the crop is good and the fruit excellent; on pyramids average crop, consisting of Bigarreau, Napoleon, old Bigarreau, and Black Heart; of May Duke and other early kinds there are none; Morello an average crop both on walls and standards. Plums good on most wall trees, standards and pyramids very thin; poor crop generally. Of Damsons there are fair crops in many places in sheltered positions; both the Common and Prune Damsons are bearing now heavy crops. Strawberries have been abundant, and fine in flavour, but soon over, except those on north borders, which have lasted well. I am still gathering from Elton Pine and Frogmore Pine; in open positions Strawberries have been completely dried up. Figs are an average crop, but some are beginning to drop owing to the continued dry weather. Grapes (out-door) are looking well. Mulberries heavy crop. Cranberries not so good as last year. Melons and Quinces thin. Walnuts very thin in most places; I have seen a few good crops. Filberts and Nuts poor. Pears an average crop; some few such sorts as Beurré Diel, Beurré Capiaumont, Bon Chrétien, Louise Bonne, Bishop's Thumb, and others are even laden with fruit. Peaches are an excellent crop, especially under glass copings—no aphis, no blister, but on open walls there is a good deal of blister. Of Nectarines there is a good crop. All kinds of small fruit are abundant but small, except Gooseberries, which are of good size and excellent in flavour.—G. Breese.

Hampshire.—Heckfield Place, Winchfield.—In this neighbourhood fruit crops are anything but satisfactory. Apples are a complete failure, owing partly to the superabundance of last year and the consequent weakening of the trees, and partly to the ungenial weather which occurred when the trees were in bloom, quite three-fourths of the blossoms being destroyed by frost. Apricots are a thin crop, but very fine, having had an abundant supply of water. Peaches and Nectarines are also a thin crop, having suffered from the same cause as Apples, although well protected; the trees are, however, making good growth, and a partial rest will be beneficial in recruiting their energies for next year. Of Cherries, there are good crops of all kinds, Morellos being unusually good. Blight (black fly) has been very troublesome on these, and nothing we have tried has proved so effective an antidote as frequent washings with clean water. Pears are variable, some kinds being heavily laden, others thin, and many are without fruit. The following kinds are all good, viz.:—Winter Nelis, Marie Louise, Thompson's, Louise Bonne of Jersey, Beurré Rance, Easter Beurré, Knight's Monarch, Ne Plus Meuris, and Duchesse d'Angoulême. Plums on walls are excellent, but standards are bearing bad crops. Raspberries, Gooseberries, and Currants have all been abundant, and the fine weather which we have had has allowed them to be gathered in fine condition. Strawberries have also been excellent, but the excessive heat caused the supply to be of short duration. The best sorts for the light soil of this district are—President, Keen's Seedling, La Grosse Sucrée, Vicomtesse Hericart de Thury, Sir Charles Napier, and Frogmore Late Pine. Of Walnuts there are very few, but of Filberts and Cobs average crops. Altogether the fruit crops are much below the average.—W. Wildsmith.

—— **Strathfieldsaye.**—Fruit crops are poor hereabouts this season. Apples bloomed profusely, but we have very few fruit, and the same may be said of Pears. We had frosts on most nights when they were in flower, but they did not exceed 3° or 4°, an amount which I have not found to affect the Apple blossom in former years. I attribute our almost entire failure to the long continued north-east chilling winds which we had. Apricots bloomed sparingly, and chiefly at the extremities of the shoots, caused, doubtless, by the previous season's growth being imperfectly ripened; of these I have almost half a crop of fine fruit. I find the Early Orange very valuable, as it scarcely ever fails to bear a full crop, and the tree is much less liable to have limbs die off than any other variety with which I am acquainted. Peaches are a full crop and have made very good growth. From the Salway, which generally bears well, I have in most seasons been able to gather fine dishes of fruit in November. Plums are plentiful on walls, none on standards; Cherries the same. Strawberries and Raspberries were abundant, but their season was unusually short. Gooseberries are scarce, and Currants are less plentiful than usual.—James Bell.

Berkshire.—Coleshill.—Apricots here are a light crop; Plums on walls middling; Cherries thin, with the exception of Morellos, which are good; Peaches and Nectarines very good; Apples a light crop; Pears scarce and rather small; small fruits very good; Strawberries an average crop; Nuts scarce.—S. Haines.

——'**Royal Gardens, Frogmore.**—The fruit crop here and in this neighbourhood can scarcely be said to be an average one; Apricots are thin. This is not owing to spring frosts, but probably through the continuation of cold weather during a part of April and May, causing the young fruit to drop. The Royal Apricot suffered the most, and all varieties continued to drop their fruit up to the period of ripening. There is a good average crop of Peaches which promise to be of good quality; trees healthy and vigorous; Apples are generally below the average, although some sorts, such as White Paradise, Pomona, Frogmore Prolific, Rosemary Russet, and Codlins, are bearing heavy crops; the Blenheim Pippin is generally scarce. Pears are an average crop, and the fruit is clean, and pretty free from spots. Plums are a thin crop, and Damsons almost a failure. Strawberries, which were late, were below the average, and of short duration—the best proved to be La Grosse Sucrée, Sir J. Paxton, Sir C. Napier, James Veitch, Cockscomb, Fairy Queen, and Frogmore, late Pine. Of bush fruit there is a fair crop, and of Filberts and Walnuts about an average. Cherries were very thin on standards, but a fair crop on walls.—Thomas Jones.

—— **Bearwood.**—Apricots here are an average crop; they consist of Moor Park, Turkey, and Early Orange. Plums good on walls, scarce on standards; we grow Kirke's, Green Gage, Victoria, Jefferson's, Golden Drop, Prince of Wales, and Early Favourite, the latter an excellent early Plum from which I have been gathering for the last fortnight. Cherries a good crop and good in quality. Peaches and Nectarines an excellent crop; sorts grown—Acton Scot, Noblesse, Bellegarde, Royal George, Stirling Castle, and Royal Ascot; the two last-named are excellent Peaches for out-door purposes. Nectarines—Downton, Elruge, Hunt's Tawny, Pitmaston Orange, Violette Hative, and White. Apples are a very bad crop. Pears an average one, good on walls, and heavy crops in places on standards. Strawberries have been good, but owing to very hot weather setting in they were of short duration.—James Tegg.

SOUTH MIDLAND DIVISION.

Huntingdonshire.—Ramsey Abbey.—I never saw fruit trees of all kinds look more promising than they did last spring, but the long continuance of easterly winds sadly marred our prospects. Apples are a good half crop. The most reliable kinds this year are Hawthornden, Lord Suffield, Codlins of various kinds, Waltham Abbey, Ribston Pippin, Fearn's Pippin, Cox's Orange Pippin, Red Quarrenden, Dumelow's Seedling, and Norfolk Beaufin; the latter always bears well here. The best results are obtained from dwarf trees in the kitchen garden this year; many of these are carrying a good crop. Peaches and Nectarines are an abundant crop, and the trees are healthy; our trees have been protected in various ways, some with only a light protection of Yew sprays, and these latter are carrying as good a crop as others that were more elaborately protected. Apricots are very thin indeed. Plums—mostly thin, the only exceptions being Denyer's Victoria, Orleans, and Green Gage, the latter on a north wall. All the trees of Victoria are heavily cropped, both standards and on walls. Cherries, with the exception of Morellos, are a complete failure. Pears are very thin, only a mere sprinkling; Beurré Diel is the only kind that is carrying a crop; even Glou Morceau, that has never failed before here, is almost destitute of fruit. Bush fruits and Strawberries are most abundant. In some places in this neighbourhood Gooseberries and Raspberries have failed, but we have never had better crops. Nuts of all kinds are thin.—E. Hobday.

Bedfordshire.—Luton Hoo.—Gooseberries, Currants, Strawberries, and Raspberries are plentiful here this season, and in good order for preserving. Peaches and Nectarines are a heavy crop. Apricots very thin; and Plums, Cherries, Apples, and Pears are also thin. Nuts are about half a crop.—C. B.

Buckinghamshire.—Wycombe Abbey.—Fruit crops, with the exception of Morello Cherries, Pears, Strawberries, and small fruits, are considerably below the average. There are a few instances in which orchards show a fair amount of fruit, but in most places the trees are almost bare. The Apple crop is almost a failure, but early kinds appear to be more plentiful than late ones; Keswick Codlin and Lord Suffield are bearing best, and they are the best for culinary purposes at the present season. Plums on standards are very scarce, a remark which even applies to that sterling kind the

Victoria, which is generally very fruitful; but on walls there are fair crops on most trees. Pears are much more plentiful than Apples or Plums, but they will be small owing to the long-continued drought, combined with the vigorous hold which that invincible enemy the red spider has effected on the foliage in many places. Peaches and Nectarines are a fair crop but very late, a fact plainly indicated here in the case of the Early Beatrice Peach; of this the first ripe fruit was gathered here on the 23rd July, whereas in the two preceding years it was obtained in the same condition at least a fortnight sooner. Apricots are very thin, but excellent in quality.—Geo. T. Miles.

—— **Latimers.**—Apples are very much under average. Pears a little better, but still under average. Plums and Cherries an average crop. Peaches and Nectarines the same. Apricots under average. Filberts an average crop. With the exception of Raspberries, all small fruits are very abundant, but not so good in flavour as in former years, on account of there having been so little rain. We have only had two slight showers during these last four months. —A. Donaldson.

Hertfordshire.—Rabley.—Apples here are very scarce; the best bearing varieties among them are Lord Suffield, Quarrenden, Hawthornden, Codlin, Pearmain, and Wyken Pippin. Apricots a partial crop; the best are Moor Park, Breda, and Shipley. Cherries a light crop, standards in many places a complete failure; the best are Morello, May Duke, and Early Rivers. Plums very partial; the best are Orleans, Victoria, Golden Drop, Damsons, and Early Prolific. Peaches a fair crop; among these Royal George, Princess Beatrice, and Crawford's Early are the best. Nectarines, Bellegarde. Strawberries abundant; the best are Sir Charles Napier, Garibaldi, Keen's, and Lucas. Small fruits plentiful. Pears partial; among Pears, the best are Beurré Bosc, Doyenné du Comice, Jargonelle, Passe Colmar, and Louise Bonne of Jersey. Nuts very scarce. Figs but little grown.—E. Bennett.

Northampton.—Castle Ashby.—Fruit crops here and in the neighbourhood are very unsatisfactory this year. Of Apples we have none at all. Pears growing on pyramids a few; on horizontal-trained trees also a few; and on walls by no means plentiful. Apricots are a medium crop. Plums moderate on wall trees, none on standards. Peaches and Nectarines a few. Cherries none, except Morellos, of which there are a few. Currants—Black a fair crop; Red moderate. Gooseberries good. Raspberries a few, suffered much by heat and drought; fruit inferior. Strawberries a good crop, but of short duration and small. There is a fair crop of Walnuts and Cobs. All kinds of out-door fruit are and will be, I fear, very inferior in size and quality this season.—G. Beech.

—— **Burghley, Stamford.**—Except small fruits, such as Currants, Raspberries, Strawberries, and Gooseberries, all other fruits are much under average. Strawberries have been abundant and good; among them I find none equal to Sir Charles Napier; this season, in yearling plants, they have been both prolific and of excellent flavour. Apples, of which we grow largely, are much below the average; and of the best Apple for kitchen purposes, viz., the Wellington, there is scarcely any; after seven years' experience I find Dutch Mignonne a sure bearer, owing probably to its being a late-flowering kind. Keswick Codlin and Hawthornden are also good early kitchen Apples and sure bearers. Pears are best on standards grafted on the Quince, and the best variety is Beurré d'Amanlis. Of wall Pears we have but few, in fact almost none. To Apricots (Moor Park) we have 700 ft. of south walling devoted, and though all were protected with three thicknesses of old fish netting they are a very poor crop; instead of hundreds of dozens which we had last year we shall not have fifty dozens in all. Plums are quite a failure; Victoria and Prince of Wales, which usually bear well, are, in common with other sorts, barren. Peaches and Nectarines on south walls good, but on west walls a failure. Of Figs an enormous crop showed, but in consequence of the dry weather most of them have dropped off. Except Morellos, which are an excellent crop, we have not gathered a single dish of Cherries.—R. Gilbert.

Oxfordshire.—Blenheim.—All kinds of wall fruits in this neighbourhood are very thin indeed. Apples and Pears in orchards are also light, many trees being quite barren, although they bloomed profusely. Small pyramidal trees are somewhat better. Plums, too, bloomed well, but fell afterwards, owing to imperfect fertilisation. Of bush fruits of all kinds there is a full crop and good in quality. Strawberries were also good; President, Sir J. Paxton, and Dr. Hogg especially so. Nuts are an average crop. In an unheated orchard house here Peaches, Nectarines, and Plums are very fine—a fact which shows that cool houses are better than walls.—Wm. Crump.

WEST MIDLAND DIVISION.

Gloucestershire.—Tortworth Park.—I have little to report as regards the state of our fruit crops beyond disasters, and these too of a severe character, vegetation in the early part of the season having been brought to a complete standstill by continuous frosts. Our Apple crop is but very limited. Fruits which otherwise escaped are dropping, owing to excessive drought, for we have only had a few hours' rainfall since the last week in April. In some farm orchards on heavy soil the trees are bearing good crops in sheltered situations. The Codlin section is more productive than the mid-winter and spring varieties. Pears are a complete failure, with the exception of that never-failing variety, Alexander Lambre. Cherries on standard trees are an entire blank; about one-fourth on walls have escaped; the Morello is, however, bearing heavily. Peaches and Nectarines, a few straggling fruit here and there. Plums, Figs, Walnuts, and other Nuts a failure. Small fruit of every description has been plentiful and high flavoured, but of short duration. The dry season through which we are passing ought to teach us the necessity of paying unremitting attention to deep cultivation, and also of providing shelter, in the form of mulchings, for the roots of our vegetable crops.—Alexander Cramb.

Herefordshire.—Downton Castle.—The fruit crops with us this season are not so good as usual, owing to the severe weather which we had in the spring; on the 19th of March we had 10° of frost, followed by 5° on the 20th, and 7° on the 21st, 9° on the 22nd, and 7° on the 23rd; therefore even Apricots, though well protected, are scarce with us. Of Peaches, Nectarines, Strawberries, and Morello Cherries we have good crops. Raspberries are also good but small, owing to the dry season. Red and Black Currants and Gooseberries are not half a crop. Pears are about half a crop. Apples not a quarter of a crop, and injured by blight. Plums not half a crop, with the exception of the Victoria, which always crops well, and if the fruit be well thinned it grows to a large size, and becomes improved in flavour.—W. Landon.

Worcestershire.—Madresfield Court.—We have had a long, cold, and wet spring, which continued late into May, and consequently our fruit prospects are not good. As usual in unfavourable seasons, there are some cases under very favourable circumstances in which there is a fair average crop, but as a rule the general average will fall far below expectation, the blooms having been abundant but not fully developed. These remarks particularly apply to orchard fruits, such as the Apple, Pear, and Plum. In gardens matters are more favourable; here, however, Apricots have almost entirely failed, owing to the severe frosts that occurred while the fruit was setting, and this is more or less the case in this neighbourhood, where this fruit is extensively grown. Peaches and Nectarines are good. Plums and Pears on walls abundant. Cherries and Figs good. Pyramidal and bush Apples a fair crop. Bush fruits, such as Currants, Gooseberries, and Raspberries are a fair average crop, but small, in consequence of the long drought. Strawberries from the same cause have been smaller than usual, and the season of gathering considerably shortened. Fruit trees of all kinds are, and have been, freer from blight than is usually the case.—Wm. Cox.

—— **Worcester.—St. John's Nursery.**—Apples here are rather more than half a crop, such sorts as Lord Suffield, Keswick Codlin, and Stirling Castle, are bearing best. Pears a poor crop. Plums half a crop; the White Egg and Pershore Plum are the most fruitful. Cherries half a crop. Of Damsons we have but few. Gooseberries and Currants are a fair crop. Raspberries poor. Strawberries good, especially early sorts, but of short duration, owing to the extreme heat and drought. Peaches and Nectarines scarce. Apricots almost a failure.—Richard Smith.

—— **Witley Court, Stourport.**—Fruit crops here are a partial failure, owing mainly to the severity of the weather during the blooming season, which not only cut off the bloom-buds, but materially interfered with the healthy circulation of the sap, which encouraged aphides and other insects to attack the trees and commit sad havoc, particularly upon Plums, which in many instances present a deplorable appearance, being all but denuded of leaves. Apricots are a very light crop. Apples, generally, are thin, with one exception —the King of the Pippins—which is laden with fruit, both upon tall and dwarf trees; other kinds that are carrying most fruit here are Blenheim Pippin, Dutch Mignonne, Ecklinville, Yellow Ingestre, Hawthornden, Keswick Codlin, and Tower of Glamis. Plums are generally scarce; upon an east wall we have, however, fair crops of July Green Gage, Transparent Gage, Coe's Golden Drop, Prince Englebert, Bryanston Green Gage, Jefferson, &c., whilst upon standards we have moderate crops of the following:—Belgian Purple, Prince of Wales, Victoria, Early Rivers, Goliath, and Cox's Emperor. Of Damsons we have about half a crop. Pears may be said to be

quite a failure. Strawberries have borne famous crops—President, as usual, has done uncommonly well, and so has Keen's Seedling; Lucas is also an excellent sort, useful either for dessert or for preserving, it stands dry weather well; John Powell is a valuable free-cropping kind, of good flavour; Dr. Hogg is as good as any, but sparsely cropped this year. Cherries are very scarce; Peaches and Nectarines are good crops, and the trees are remarkably healthy; Figs are heavily cropped. Small fruits, such as Currants, are an average crop, both Red and White; Raspberries excellent; Gooseberries abundant; Nuts, such as Filberts, half a crop; Walnuts half a crop; Mulberries abundant.—GEORGE WESTLAND.

—— **Impney Hall, Droitwich.**—Hereabouts, where trees are too crowded and otherwise neglected, the crops are lightest and of least value as to quality. Apples, Pears, and Plums were unusually heavy last season, and, consequently, the trees are left too much exhausted to produce much this season. Apples and Pears are generally scarce, and they will be small in size; the kinds which seem to do best are Atkins' No. 2, Blenheim Pippin, Cellini, Codlins of all kinds, Dumelow's Seedling, Dutch Mignonne, Ecklinville, French Crab, Hawthornden, King of Pippins, Kerry Pippin, Margil, Pitmaston Nonpareil, Norfolk Beefing, Northern Greening, Orange Pippin, Devonshire Quarrenden, Ribston Pippin, Tower of Glamis, and many others with local names,—kinds which are very high coloured where grown in soil in which marl abounds. Where the cordon and dwarf-tree systems are well carried out, very good dessert Apples may be found, as for example at Hindlip Hall. Apricots are under average, and many of the trees are almost killed by insects. Cherries are a fair crop, but many of the trees are much injured by black fly. Whitehearts as standards seem much in favour here. Currants of all kinds have been abundant, but generally small. Gooseberries are plentiful, and of fair size where pruning is attended to, but in general the bushes are choked up with wood. Of Figs there are fair crops where the trees are managed well, but they are too often found a mass of watery growth, with a few fruit on some outside branches. Peaches and Nectarines are a thin crop, and the trees are much blistered; early crops under glass are excellent—Early Rivers as cordons coming in first, and in the same house Walburton Admirable does excellent service as a succession to medium early kinds. Plums are moderate generally, but very heavy in some positions; they are, however, much injured by insects. Raspberries and Strawberries are plentiful, but small, and they lasted only a short period in bearing.—M. TEMPLE.

—— **Morningside, Kidderminster.**—With regard to the state of the fruit crops, from all I can learn on every side in this county and neighbourhood, the crop of all kinds of fruit has been less than has been known for many years. With the exception of small fruits, such as Gooseberries and Currants, there is literally little or no fruit. My own gardens are pretty much the type of the neighbourhood around for some miles, and here I may say that the result is as follows:—Apples very scarce indeed, and the little fruit there is very small and poor; Pears the same. Plums also a great failure, and the trees very much blighted by aphis. Cherries, except here and there, a small crop; Morello and Kentish almost *nil*. Peaches and Nectarines about half a crop on protected walls; Apricots rather more abundant, and tolerably good. Strawberries about two-thirds of a crop, but since the hot weather very good in flavour, in fact, better than for some years past; runners very slow to move, and will be scarce in many varieties. Filberts and Nuts scarcely any, and in some parts none whatever. Altogether, more disastrous results have not been known for years. As regards the sorts of fruit that thrive best in this locality I must speak chiefly from my own experience. In Apples (culinary) I find Lord Suffield, Blenheim Orange, and Dumelow's Seedling to thrive well, and to be a sufficient succession for all practical purposes. For dessert I find Cox's Orange Pippin, Ribston Pippin, Claygate Pearmain, Keddleston Pippin, Golden Pippin, and White Nonpareil to be good bearers. Among Pears the following succeed well here in ordinary seasons, and are all first-class fruits, viz., Beurré Giffard, Bon Chrétien, Louise Bonne of Jersey, Beurré Superfin, Doyenné du Comice, Beurré d'Aremberg, Beurré Diel, Easter Beurré, Beurré Renée, Joséphine de Malines, and Bergamotte d'Espéren, which in most seasons lasts the longest. Of Plums Early Prolific and Denyer's Victoria are generally good croppers, to which may be added Mitchelson's, Pershore Plum, Bryanston Green Gage, Coe's Golden Drop, Jefferson, Belle Septembre, and Reine-Claude de Bavay, all good Plums and good bearers. These are the principal fruits for the million.—W. RODEN, M.D.

NORTH MIDLAND DIVISION.

Nottinghamshire.—Welbeck, Worksop.—There was abundance of blossoms on all kinds of fruit trees, but the ungenial weather in March and April and a very cold, dry May have, in general, had an unfavourable effect on fruit crops. Apricots, Peaches, and Nectarines on walls where not protected are much below the average. Pears on walls are a fair crop, but thin on standards, the best bearing early kinds are Doyenné d'Eté and Beurré Giffard. Of later varieties of Pears the best are Louise Bonne of Jersey, Beurré d'Amanlis, Madame Treyve, Fondante d'Automne, and Easter Beurré. Cherries are quite a failure both on walls and on standards, the only kind showing an average crop being the Morello on walls. Plums are likewise everywhere in this neighbourhood a thin crop; even that free-bearing kind, the Victoria, only showed well in sheltered orchards or gardens. Apples, from the quantity of bloom on the trees, promised heavy crops, but the cold weather in April and May has thinned them considerably, and only an average crop is now likely to be gathered, except in sheltered situations. Some varieties, such as the Keswick and Manks Codlins, Irish Peach, Rosemary Russet, Oldenburg, Margil, and that best of all late Apples, the Sturmer Pippin, have cropped better than others. Small fruits, such as Gooseberries and Currants, were much injured by the frosts when in flower, and are thin in consequence. Strawberries, flowering later than usual this spring, escaped the frosts, and where properly cultivated have borne heavy crops, and the fruit has been large in size and good in flavour. For early sorts Vicomtesse Hericart de Thury and Grovend Scarlet were the best croppers and excellent for preserving. The best of the late kinds this year with us have been President, Lucas, Sir J. Paxton, and British Queen. Dr. Hogg has likewise borne an excellent crop. This variety seems to do best on strong soils. The British Queen, the best of all Strawberries yet for flavour, is of the same habit, for it never fails here, where the soil is mixed with burnt clay. The Parsley-leaved Blackberry, when grown like Raspberries, bears well here, and is much thought of for preserving, being larger in size and better in flavour than the wild Blackberry of the hedges.—WILLIAM TILLERY.

—— **Chilwell.**—In this neighbourhood the fruit crop is by no means good, not even an average one. Strawberries promised well, but owing to the eight weeks of dry hot weather which we have had they were very quickly over. Gooseberries and Currants are good. Apricots almost a total failure, as are also Walnuts. We had an abundant bloom on Plums, but during the long dry east winds in May it all fell off. I fancy that, owing to the immense crop of Plums last season, and the continued wet of last summer, which prevented the trees ripening their wood, they had not sufficient vigour to withstand the drying effects of the east wind. Damascenes are in the same condition as other Plums. Of Apples we have on the whole an average crop, some trees being full, and others with scarcely any fruit. The sorts that succeed best with us, that is, speaking of one year with another, are Barton, free bearer; Russian or Duchess d'Oldenburgh, Pike's Pearmain or King of Pippins, Blenheim Orange, Caldwell or Rymer, and Northern Greening; of course we have many other good old sorts which bear well, but not quite so regularly, such as Normanton Wonder, New and Old Besspool, &c. Pears are scarce as a rule, but some sorts are plentiful; among the latter may be named Doyenné d'Eté, Crawford, and Beurre d'Amanlis; these, Williams's Bon Chrétien, and Hessle are what we chiefly depend on. Peaches and Nectarines are conspicuous by their absence. Cherries are also a failure.—ALFRED H. PEARSON.

—— **Radcliffe-on-Trent.**—Our fruit crop is, taken as a whole, below the average, the long, inclement spring which we had, coupled with morning frosts in March and April, cleared off, except in sheltered places, most of the bloom. Apples are a middling crop. Keswick Codlin, Lord Suffield, Pearson's Plate, and, best of all, Besspool and Besspool Improved, are very good crops; indeed, it is a Besspool year hereabouts. Pears are a very thin crop—Williams' Bon Chrétien, Louise Bonne of Jersey, Napoleon, and Jargonelle are the only ones I have which carry fruit, though the trees in spring were sheets of bloom. Plums are scarce—Orleans and Victoria are the only kinds which have any on them, and these are only bearing about a third of a crop. Of Cherries we have none. Strawberries are good, but not having a good water supply they did not swell off well—President, Vicomtesse de Thury, Frogmore Late Pine, and Keen's Seedling are all good bearers, and do well here. Out-door Peaches, consisting of Royal George and Noblesse, are a good crop. Apricots scarce in all places, even under walls with glass copings. Walnuts are a very fair crop, which is confined to the south side of the trees. Of Gooseberries we have a good crop in sheltered situations; in exposed ones it is very partial. Of Currants Red and Black the same may be said. Raspberries are a fair crop, but in consequence of the hot, dry weather of June and July, they have swelled off badly.—N. H. POWNALL.

—— **Eastwood Hall.**—In this neighbourhood our favourite Apples are Keswick Codlin and Lord Suffield for early kitchen use, and Yorkshire Greening for late kitchen use; Blenheim Orange and

Eve are our best table sorts. Of Pears, of which we have a good collection, the best are Marie Louise, Napoleon, and Aston Town, but this year they are not good in quality. Strawberries do well here; the best are President and Lucas, both for forcing and open ground culture. Nuts and Walnuts—A fair crop of Nuts; no Walnut trees healthy. Gooseberries and Currants—A most abundant crop; trees free from insects. Strawberries—A splendid crop; favourite sort, President. Raspberries—A good crop; fine fruit and good flavour. Cherries—A very thin crop of all sorts. Nectarines—A most abundant crop; trees healthy. Peaches—A grand crop; trees in good condition. Pears—A poor crop, scarcely any at all. Plums—None at all; trees very much blighted. Apricots—A few of Moor Park, none of other sorts. Apples very scarce; a few Keswicks and Greenings. Figs—A good crop; trees look well.—Chas. Turner.

Leicestershire.—Coleorton Hall, Ashby-de-la-Zouch.—Of Apricots we have very few, much under average, and the same may be said of Apples. Pears are an average crop on walls, under average on standards. Plums on walls are an average crop. Peaches and Nectarines abundant. Morello Cherries good; others moderate. Strawberries of all kinds very plentiful. Raspberries are very good. Gooseberries and Currants not half a crop; they were destroyed by frost and snow in April. Of Figs we have very few indeed. Nuts very thin; scarcely any.—M. Henderson.

Derbyshire.—Osmaston Manor.—Apples, Pears, Apricots, and Plums are good crops; Damsons and Medlars half a crop; Strawberries very good, and large Raspberries the same; Gooseberries half a crop; Red Currants good, Black none, owing to the buds being destroyed by birds; Walnuts none; Filberts scarce, and other Nuts not more than half a crop; Peaches, Nectarines, and Figs, indoors, good crops. The kinds of fruits that succeed best with me are the following:—Apricots—Moor Park. Pears on walls—Marie Louise, Comte de Lamy, Louise Bonne of Jersey, Williams' Bon Chrétien, Gansel's Bergamot, Beurré d'Aremberg, Beurré Diel, Easter Beurré, Winter Nelis, Glou Morceau, Beurré Hardy, Passe Colmar, and Jargonelle. In the shape of pyramids we have Knight's Monarch, Louise Bonne of Jersey, Williams' Bon Chrétien, and others. The best dessert Apples are Court Pendu Plat, Cox's Orange Pippin, Ribston Pippin, Gravenstein, Margaret, Sturmer Pippin, Fearn's Pippin, and others: Kitchen—Blenheim Pippin, Cox's Pomona, Hawthornden both old and new; Keswick Codlin, Manks Codlin, Northern Greening, Dumelow's Seedling, Warner's King, Waltham Abbey, Lord Suffield, Minchall Crab, and others. Our best Cherries are the Elton, May Duke, Black Tartarian, Black Eagle, Bigarreau, Napoleon and others. Plums—Coe's Golden Drop, Dove Bank, Kirke's, Jefferson's, Victoria, Washington, Blue Gage, and Green Gage. Black Currants—Naples; Red Currants—Victoria, and Warner's Grape. These fruits bear good crops yearly on gravelly soil.—J. Booth.

Lincolnshire.—Aswarby Park.—Of Apples we have here very few, and the same may be said of Apricots. Black Currants under average. Red Currants full crop, and the same may be said of Figs out-of-doors, to which no protection was given in winter. Of White Smith, Warrington, and Scotch Red Gooseberries we have had a full crop. The following varieties of Pears are bearing a full crop, viz.:—Léon Le Clerc, Duchesse d'Angoulême, Louise Bonne of Jersey, Beurré de Picquery, Broom Park, Hacon's Incomparable, Knight's Monarch, Althorp Crassane, Chaumontel, Easter Beurré, and Crassane—these are grown as pendulous pyramids; on all other varieties grown here there is not an average crop. Of Green Gage, Prince Englebert, Magnum Bonum, Coe's Golden Drop, and the Czar Plums we have an average crop, while that on about forty other varieties grown here is a failure. On Peaches and Nectarines outside we have a full crop, and they are making good clean growth. Strawberries have been a full crop, and the fruit has been large and fine, especially that on Keen's Seedling, President, Sir Joseph Paxton, British Queen, and Dr. Hogg. Walnuts and Mulberries are an extra heavy crop. With the exception of one orchard about a mile from here, fruits of all kinds are under the average in this neighbourhood.—Richard Nisbet.

—— **Bloxholm Hall.**—Fruit crops are not very promising in this neighbourhood; we had an excellent show of blossom on all kinds of out-door fruits, and in many cases the fruit set abundantly, but cold weather with east and north-east winds during the first three weeks in May did its work completely. Apricots, Apples, Cherries, Plums, Pears, and Gooseberries fell off in great quantities, leaving only a very poor crop. Black, Red, and White Currants are rather under the average, but the fruit is all that could be desired. Peaches are a fair average crop. Walnuts and Filberts good. Apricots under the protection of glass are good crops, but under canvas rollers they are a failure—a fact which points out that, after all, glass structures constitute the only safe way by which good and regular crops of fruit can be secured.—D. Lumsden.

SOUTH-WESTERN DIVISION.

Dorsetshire.—Moreton, Dorchester.—Of Apricots we have very few, but there are not many grown. Peaches and Nectarines very good in orchard-houses hereabouts, on open walls nearly a failure; trees suffered from cold east winds in spring, and of course are not improved by the drought which we have been experiencing. Of Apples some sorts are bearing very fair crops here, particularly Blenheim Orange, which is one which seldom fails, and is altogether one of our very best Apples; but in some places Apples are almost a failure. Pears and Plums do not amount to half an average crop. Cherries fair, Morellos good. Figs good. Strawberries very good indeed, but, owing to the drought, of short duration. Gooseberries about half a crop. Currants very good. Raspberries good, but suffering from drought.—D. Uphill.

—— **Sherborne.**—Up to about the 12th of April the fruit crops in this neighbourhood were very promising, but on that date and for many days afterwards they were very much damaged by frost. Apples, both in gardens and orchards, are a thin crop, and much blighted. Apricots a very poor crop, excepting in favoured spots. Berberries plentiful. Cherries a thin crop, with the exception of Morellos, which are about an average crop. Pears on walls thin, and on standards scarcely any. Figs moderate. Gooseberries and Currants very much below the average. Peaches and Nectarines on walls a good crop, but the foliage is much blistered. Plums much below the average. Raspberries are plentiful. Strawberries a very good crop, but the fruit did not swell to a large size.—W. G. Peagnell.

—— **Clevelands, Lyme Regis.**—Fruit crops in this district are far from being satisfactory. The unusually severe weather experienced in the early part of the year, and later on continuous cold east winds, did much to decimate our fruit crop, and vegetation generally suffered considerably. Bush fruit is unusually scarce. Gooseberries are a total failure, except in a few instances, where the bushes are very sheltered. Of Currants we have very few. Raspberries are small and scarce. Strawberries an average crop and good in quality. Wall fruit generally much below an average, with the exception of Plums, of which there is a fair crop. Pears are a short crop, and Apples also are very deficient.—H. Munro.

—— **Canford.**—Crops of bush fruits in this part are abundant, but they have suffered from the drought; large tree fruits, as Apples, Pears, and Plums, are generally light. To particularise, the earliest blossom on Strawberries was cut by the frost in April last, but an abundant second blossom yielded a fine crop of smaller fruit. Gooseberries, Currants of all sorts, and Raspberries are abundant. Strawberries grown by us are Marguerite, very large; President, also very large, a firm fruit, and highly coloured; Sir Joseph Paxton, still a first class Strawberry for this part; Vicomtesse Hericart de Thury is a dwarf-growing, very prolific Strawberry, and an excellent forcer. Dr. Hogg is one of our standard Strawberries; Keen's Seedling is grown for preserving in this part. Our best late Strawberry is Eleanor, which is very large and prolific. The main crops of Gooseberries are confined to White Smith, Warrington, Early Sulphur, and Crown Bob, together with a few other sorts. Many varieties of Pears suffered from frost attacking the blossoms in the month of April; on the morning of the 12th the blossom was enveloped in 2 in. of snow, which for the time did not seem to injure it much, but bad effects soon became apparent; later blossom set, but the crop is deficient. Apples on dwarf trees are half a crop; on orchard trees they are an entire failure. Some of the sorts of Pears which do well here in the form of standards are Beurré Bosc, Williams' Bon Chretien, Marie Louise, Chaumontel, Gansel's Bergamot, Beurré Diel, and Beurré de Capiaumont. A list of those which do well as espaliers and dwarf trees would include most of the more popular and favourite varieties. Among Apples, the best are Dumelow's Seedling, Cox's Orange Pippin, Cox's Pomona, Mere de Menage, Lord Suffield, Cellini, Court Pendu Plat, Golden Winter Pearmain, Kerry Pippin, Dutch Mignonne, French Crab, Devonshire Quarrenden. These can always be depended on. Margil, Cornish Gillyflower, Court of Wick, and Old Nonpareil do very well as dwarf trees. Apricots are this season a good crop; the varieties consist, namely, of Moor Park and Royal Orange. Plums are scarce on standard trees. Green Gages on walls moderate; Green Gages do well here on a north wall or rather aspect; Victoria and Prince of Wales are very satisfactory in the form of standard trees; also in some parts White and Red Magnum Bonum. Cherries have been a light crop, and the trees suffered much from blight in May, owing to the continuance of easterly winds. Figs are a good crop; they do best when very sparingly pruned—in fact, not stopped at all; the sorts are Brown Turkey and Brunswick; they are never protected in winter; water and feeding at the proper period—say now and onwards to the third week in August—is the grand secret of success in out-door fruit culture on the south coast on light soil.—W. D.

Cornwall.—Enys, Penryn.—Apples here are much below the average. There are here and there, however, a crop of late kinds, such as Margil, Winter Pearmain, and Blenheim Orange, which are the best late kinds about here—Codlins (Keswick) are generally prolific, and the same may be said of Hawthornden, all free-bearing sorts that do pretty well most seasons, but the shy bearers, owing to the nature of the soil, require to be kept dwarf and well pruned in order to get a crop. Of Pears there is a sprinkling of most sorts, but such kinds as Swan's Egg, Williams' Bon Chrétien, Louise Bonne of Jersey, do best, and are bearing this season in most places good crops. Of Peaches and Nectarines we have good crops. Blight was at one time very prevalent, but the trees are now looking well. Strawberries have been good, but owing to the dry weather the crop has been short. Gooseberries and Currants abundant. Of Cherries we have fair crops in most places. Brown Turkey Figs on walls are abundant. Raspberries good. Plums, preserving kinds, a very poor crop. Of Green Gage there is a sprinkling. Apricots, as a rule, do not bear well in Cornwall.—Henry Mills.

Devonshire.—Killerton, Exeter.—Apricots hereabouts are below the average, as are also Plums and Cherries, and the trees are much blighted. Of Peaches and Nectarines we have good crops and healthy trees. Of Apples there are good average crops on the best land. Pears on walls moderate, and on pyramids scarce. Currants, both Red and White, are good crops; Black scarce. Gooseberries very plentiful. Raspberries moderate, and the fruit is small. Strawberries have been a very good crop. Nuts, where grown, good. The best two Strawberries I have grown for a crop are—Wonderful and Newton's Seedling; the latter is a heavy bearer, and would suit market gardeners well. Of Plums here, by far the heaviest cropper is Prince Englebert in the form of a pyramid; it is a fine Plum and a free grower, and it bears so freely in some seasons that I have to prop it all round to prevent it from breaking down; it bears much more heavily than Mitchelson's, which is another good bearer, trees of it that are growing too strongly I shall root-prune in a few days. Of Pears, Jargonelle and Bergamotte d'Esperen are bearing heavily, while on Glou Morceau, Monarch, Zephirin Gregoire, Chaumontel, Doyenné du Comice, and Beurré d'Amanlis, there are fair crops. Pears on pyramids set their fruit thickly, but it fell from the cold in May and June. Among the best Peaches here are Royal George, Noblesse, Barrington, and Dymond; and the best Nectarines Elruge, Violette Hative, and Rivers' Early Orange, all of which are bearing uncommonly well. The best Apples are Blenheim Orange, King of the Pippins, Royal Russet, Dumelow's Seedling, Autumn Pearmain, and Red Quarrenden. These make fine orchard trees, and bear well. —John Garland.

Wiltshire.—Bowood, Chippenham.—Fruit crops this year cannot be spoken of in very high terms; Pears are inferior both in quality and quantity; Apricots are scarce, but the fruit is of fair quality; Peaches and Nectarines are an average crop; Plums are scarce; Cherries, both early and late, are not bad on walls. Strawberries were of good quality, but not quite an average crop; most sorts of Currants are good; Raspberries promised to be a good crop up to within a fortnight of their ripening, after which they suffered very much from want of rain; Gooseberries are very small. The season has been a very trying one; throughout the spring months the weather was unusually dull and wet, in fact nothing but wintry weather up to the middle of May. Apricot trees are, however, now making fine growth; they seem to have enjoyed the hot weather of last month immensely.—W. Scammell.

—— **Thoresby.**—Apricots set well here, but dropped off afterwards; and although well protected, the crop will be under an average one. Peaches are a fair crop, but they will be late. Plums on walls will be light, and on standards in orchards there are none. Pears on walls will be a good average crop, especially on west aspects. Louise Bonne of Jersey is producing a heavy crop; Williams' Bon Chrétien, Gansel's Bergamot, Beurré Superfin an average crop. On Catinka there is a heavy crop. Citron des Carmes, Triomphe de Louvaine, Theodore Van Mons, Fondante d'Automne, Conseiller de la Cour, Matthews' Eliza, Brockworth Park, Emile d'Heyst, Angélique de Bordeaux, and White Doyenné are all yielding fair average crops. Cherries are abundant, and the fruit excellent. Black Tartarian, White Hearts, and also Morellos are plentiful. Small fruits are abundant, with the exception of Black Currants, which are very thin. —A. Henderson.

Somerset.—Ashton Court, Bristol.—Of Apples we have a fair average crop. Pears are thin, and will probably be small. Apricots, Plums and Cherries are all under the average, and much blighted. Of Peaches and Nectarines we have good crops both under glass and on open walls; those on the latter promise to be very late in ripening; the trees are clean and healthy. Strawberries on the whole were a good average crop, but small. Bush fruits good but small. Nuts of all kinds are very scarce. With the exception of Apricots, all kinds of fruit trees succeed well in this district. Of Apples large quantities are grown for cider-making, and in good seasons they prove a profitable source of income.—John Austen.

NORTH-WESTERN DIVISION.

Lancashire.—Waterdale, St. Helens.—Apple crops hereabouts are very poor; the best is a late Apple locally called the Rose of Sharon, which is bearing a fair crop, and is much grown about here. Of Pears there are scarcely any, and the same may be said of all sorts of stone fruit. Red Currants are an average crop, but Black kinds are very light, and Gooseberries are the same. Raspberries are below the average. Strawberries have been a good crop, and well coloured; Vicomtesse Hericart de Thury supersedes all others on our cold clay; next come President and Sir Charles Napier.—James Smith.

—— **Knowsley, Liverpool.**—Apples in this neighbourhood are a poor crop, and the same may be said of Pears and Plums. Cherries are somewhat better, but I have seen finer fruit than we have this year. Peaches and Apricots on open walls are better than one could have expected, considering the cold spring we had; at first they looked very thin, but as the fruit increases in size the trees look more promising. Currants and Gooseberries are a thin crop, but the fruit is good. Raspberries have suffered from want of rain until within the last few days, when they seem to have rallied wonderfully and are finishing off pretty well. Strawberries have been both plentiful and good; they are now just over, with the exception of the Alpines, which will last for some time yet.—F. Harrison.

—— **Ormskirk.**—This district, owing to its western sea-board, is not well suited for fruit, and orchards are rare, if indeed there are any worthy the name; still, owing to the vast amount of population, particularly of the manufacturing class, fruit is in much demand, and is cultivated in every locality favourable to its growth—mostly in gardens and about farmhouses. Fruits in general this year, owing to late frosts, and also partly owing to the exhaustion caused by last year's crops, are a failure. Apples are about one-third of an average crop. The old, but nearly discarded, Keswick Codlin seems an exception, trees of this kind being loaded. Lord Suffield has nearly driven this and many other kinds out of date, and more of this fine free Apple is planted than of any other. Rose of Sharon and Rollison are two Apples that generally bear well about here, and among dessert Apples King of the Pippins seems to do as well, if not better, than any other. Pears are a complete failure, though of course there are always some Pears. A really good Pear year is only expected about every seven years (of course I am not alluding to the finer protected kinds in private gardens). A variety called the Hazel bears enormous crops. Marie Louise is popular for buildings, stable walls, and similar places, but it will not bear here as a standard. The old Jargonelle, once such a favourite, is much given to canker. Of Plums and Damsons we have none. The Victoria bears prodigiously, and it may be grown as bushes, like Gooseberry trees. Were I about to plant 100 Plum trees, I should plant 90 of Victoria. Of Cherries few are grown about here, except on walls, but the crop this year has been a light one. The Morello is grown largely on north aspects as a dessert fruit, and bears splendidly. Gooseberries are a complete failure, except in very sheltered positions, under trees or on the lee side of quarters, where they are grown in masses. This moist cool climate suits this fruit admirably. A variety called Crown Bob is very popular to gather green for market purposes, and the Aston Seedling is esteemed the best for dessert or for preserves. Currants both Red and White are poor crops; of Black there is an average crop. The cold spring and the late hot weather have just suited Strawberries. They do admirably, especially in dry hot summers, on our cool, mossy land, and among others Vicomtesse Hericart de Thury bears prodigiously. Of this kind, a quart per yard in the row at a gathering is nothing uncommon.—Thos. Williams.

Cheshire.—Crewe Hall.—Most out-door fruit crops are under an average this season, some very much so, owing to the severe frosts which occurred when they were in blossom. There were nine nights in April and fifteen in May on which the thermometer showed from 1° to 9° of frost, and had not the atmosphere been dry at the time fruit crops would have been still less than they are. Apricots hereabouts are scarce; Peaches and Nectarines protected when in blossom are a good average crop; Pears on walls are considerably under the average, and they are scarce on pyramids and standards; Apples the same; some kinds of Plums on walls, such as Denyer's Victoria, are a good crop, but in general they are a failure; of Damsons, which are largely grown in this county, there are very few; Strawberries have been an abundant crop, and the fruit good in quality; Raspberries the same; Red and White Currants scarcely an average crop; and of Black Currants and Gooseberries we have had very few. The princi

pal varieties of fruits which I grow, and which I find to succeed best, are the following, which I have set down as nearly as possible in their order of ripening. Beginning with Apricots we have Golden Drop, Kaisha, Moor Park, and D'Alsace. Peaches—Early Beatrice, Early Louise, Rivers' Early York, Acton Scott, Early Alfred, Dagmar, Dr. Hogg, Royal George, Grosse Mignonne, Noblesse, Alexandra Noblesse, Dymond, Barrington, and Walburton Admirable. Nectarines—Elruge, Stanwick, Hardwicke Seedling, Violette Hâtive, Rivers' Orange, Pine Apple, and Victoria. Pears—Citron des Carmes, Jargonelle, Williams' Bon Chrétien, White Doyenné, Louise Bonne, Beurré Diel, Van Mons, Glou Morceau, Knight's Monarch, Winter Nelis, Joséphine de Malines, Easter Beurré, Beurré Rance. Plums—Green Gage, Transparent Gage, Victoria, Kirke's, Coe's Golden Drop, Reine Claude de Bavay, Washington, Magnum Bonum. Apples—Irish Peach, King of the Pippins, Cox's Orange Pippin, Ribston, Old Nonpareil, Nonsuch, Keswick Codlin, Hawthornden, Lord Suffield, Mère de Manége, Yorkshire Greening, Northern Greening, Dumelow's Seedling, Norfolk Beefing. Strawberries—Keen's Seedling, La Grosse Sucrée, Vicomtesse Hericart de Thury, President, Sir J. Paxton, and Elton Improved.—W. Whitaker.

—— **Abney Hall, Cheadle.**—This cannot be reckoned an average fruit year in this district. Here the Apple crop was a very promising one (though in other places it was not good), but these last few very dry days have brought a good many off the trees; still the crop will be good. Pears are not an average crop. Louise Bonne of Jersey is bearing a good crop, but others scarcely any. Strawberries have been fairly good, and were gathered in good order. The best sorts here are Lucas and President; the other sorts which we have are Frogmore Late Pine, a kind of no use here, and Dr. Hogg, which is not worth growing with us; Amateur has done better this year than last, but it might be classed about fourth-rate; Carolina Superba is grown for its flavour, and Black Prince for preserving. Black Currants have turned out well when gathered off young bushes. In some places hereabouts they are a failure. Red Currants are an average crop. Gooseberries with us are under an average, and I believe the same is the case generally in this district. Raspberries the same, and the late hot and dry days have injured the later gatherings. All the stone fruits are a good deal under average.—R. Mackellar.

EASTERN DIVISION.

Suffolk.—Shrubland Park.—Fruit crops in this neighbourhood are very light indeed. Apples and Pears are much under average. Apricots are a failure, and Plums not much better. Cherries are thin, with the exception of Morellos, which are a fair crop. Peaches are good, both under glass and on open walls. Strawberries were plentiful and good, especially British Queen; I find this and Sir Charles Napier to be the most trustworthy, both for forcing and in the open ground. Bush fruits have been good and cleaner than I have seen them for years. Among Apples I find King of the Pippins and Cellini to be the most regular bearers. The finer sorts of Pears, such as Marie Louise, Doyenné du Comice, Thompson's, &c., are almost blanks, while of Louise Bonne of Jersey, Comte de Lamy, and Althorp Crassane on standards, there are about average crops; Glou Morceau and Easter Beurre on walls are tolerably good in cottage gardens hereabouts. Green Gages, Damsons, and Bullaces are generally plentiful, but this year few are to be seen.—T. Blair.

—— **Henham Hall.**—Apricots are a good average crop. Peaches and Nectarines very good, the late sunny weather having promoted the growth of both fruit and foliage immensely where attention was paid to mulching and watering. Plums both on walls and on standards are a heavy crop, Damsons especially so, the trees already bending with the weight of fruit. Pears are a moderate crop, but good in quality. Figs are abundant; they flourish in this neighbourhood with scarcely any attention, a hard, rather poor soil, producing most fruitful trees. Cherries are good, especially the Morello, which, when grafted on the Mahaleb stock, is the most productive and best Cherry we have for culinary purposes or for preserving. Apples are a very variable crop, especially on standards, on which they are very thin; on espaliers and dwarfs they are good. Bush fruits are especially abundant and clean. Strawberries plentiful, but scarcely of average size, and on light soils they were of short duration. Filberts and Nuts are good crops; but Walnuts are very thin. Taken collectively, fruit crops this year are very variable, the long continuance of easterly winds during the flowering season having greatly diminished the crop in exposed situations.—James Groom.

—— **Culford Hall, Bury St. Edmunds.**—Everywhere we hear of there being light crops of nearly all kinds of fruit this season, bush excepted. Apricots are light, but the fruit, as far as it goes, is of good quality. Peaches and Nectarines are hardly an average crop. Plums on walls are bearing a light but regular crop; pyramidal trained standard trees are a failure, with the exception of a few trees of Rivers' Early Prolific, which are carrying a light crop; this variety very seldom altogether fails. Of Cherries only the Morello variety is grown in the open air here, and trees of it are bearing a fair crop, although lighter than usual. Other kinds in orchard houses have borne good crops. Apples are almost a failure here; I have, however, observed some few trees in cottage gardens in this neighbourhood carrying fair crops. Standard Pears, like Apples, are, as nearly as possible, a failure; while upon the walls, mostly upon an east aspect, such varieties as the Beurré Rose, Beurré Diel, Glou Morceau, Ne Plus Meuris, &c., are bearing very good crops. Gooseberries are plentiful and good in quality; and the same may be said of Currants. Strawberries have been a good crop, and the fruit of most of the varieties grown here has been remarkably fine, especially that of Sir Charles Napier, Sir Joseph Paxton, and British Queen.—P. Grieve.

—— **Woolverstone Park, Ipswich.**—No season could have opened with more promise as regards an abundant fruit crop than the present, and the lateness of the trees in unfolding their blooms appeared to make a fruit crop almost a certainty, but frosts and cold came later still and destroyed the blooms, or so crippled any that had set, that the fruit either dropped off or ceased to swell, except irregularly, so that many of those that remain on are mis-shapen and deformed. This is especially the case with Pears and Plums, the former of which are sure to be inferior in quality, owing to the hard knotted flesh resulting from frost-bite. Trees of these on walls are almost bare of fruit, but pyramids with us are so full as to require much thinning. Plums are thin on standards, but abundant on walls, although, as observed above, they are greatly deformed, and from present appearances will not swell to anything like their proper size. Peaches and Nectarines set well, but most of the fruit has since fallen, owing to the cold weather during May, and what remains on has a very stunted appearance, clearly showing that they will be much smaller than usual. Apricots are thin, and although the trees suffered much from the cold, both them and Peaches have made good progress during the last month or so. Cherries have been almost a failure on standards, but on walls the crops were good and the fruit fine in quality. Bush fruit of all kinds has been abundant, Gooseberries especially being very full of fruit. Apples are thin in most places, and only a crop in very sheltered situations. With us the best are Cox's Orange Pippin, Keswick Codlin, and Dumelow's Seedling. Figs showed well, but owing to the cold have since fallen off.—J. Sheppard.

—— **Hardwick House, Bury St. Edmunds.**—In general terms fruit crops are a failure about here this year. Apples, Pears, Plums, Apricots are few or none; of course there are exceptions, but they but confirm the rule. Gooseberries, too, are *nil* in my garden; in others they are a full crop. On the other hand, Currants, especially Black ones, are unusually fine. Peaches are the crop of the season in the open air; these are generally a good crop, protected or unprotected; they flowered about a fortnight later than the Apricots, and so I suppose escaped, though the weather was cold. Raspberries suffered greatly from drought, and are very scarce and dear. Strawberries were partial, very fair in some gardens, poor in others—the season shortened in all by the drought. Cherries, too, are partial, good in some places, very scarce in others. Nuts of all kinds are thin. The failure among fruits cannot be wholly the result of the frost, for a great many of the Apples, Pears and Plums showed little or no bloom; much of it is due to overcropping last year; in proof of this we have the fact of no bloom on many trees, and the additional one that cordon and other trees showed well last year, and trees that had no crop or a light one are tolerably well hung with fruit this season. The lesson taught by the failure is, therefore, more thinning and better protection. The George IV. Peach, Kaisha Apricot, and the Victoria Plum are about the hardiest varieties and best croppers here.—D. T. Fish.

Norfolk.—Cossey Park, Norwich.—Apricots are a failure, especially Anson's or Moor Park; Peaches and Nectarines are under average crops; of Plums we have bad crops both on walls and standards; Apples, except in some instances, few or none, and the same may be said of Pears; Cherries below average; Strawberries were an average crop, but soon failed through heat and drought; Currants, Gooseberries, and Raspberries under average and bad in quality; Walnuts none; Filberts under average; Figs only moderate. I may add that I never observed fruit so short in Norwich market for some years.—J. Wighton.

—— **Sandringham.**—Our fruit crops hereabouts are by no means good. Of Apples we have very few, Apricots none, Pears very few, Plums very few, Peaches good, Nectarines few, Gooseberries only a few, Currants good. This has been the most backward and barren season ever known.—Charles Penny.

YORKSHIRE.

Stourton Park, Knaresborough.—Fruit crops are, in general, this season below the average, as might naturally have been expected after the very heavy crops last year. It is not often that we have two heavy crops in succession. There was a good show of blossoms last spring, but much of it was weak, and owing to this and the continuance of severe weather whilst the trees were in bloom, the crops are in general light. Strawberries have been here and in the neighbourhood good crops, but soon over, owing to the heat and drought. Of Raspberries we had a good crop; but I hear complaints of their suffering much in the neighbourhood from the heat, and they have been rather dear in consequence. Of Gooseberries and Currants I have abundance, but in the neighbourhood they are variable; the Ashton Red or Warrington, for I believe they are the same, and Whitesmith are the sorts principally grown in this neighbourhood for market, the former for preserving and the latter for tarts. Apples are very irregular, some trees having a good crop, whilst many are bearing few or no fruit; Cockpits and Keswick Codlin are the kinds most extensively grown in this neighbourhood for market; in general they bear well. Plums are very irregular; Victorias (where not overladen last year) are good, also Michelson and Orleans. Damsons and most other sorts light. Pears here are a fair crop, on standards good. Cherries very light everywhere. Apricots are a fair crop here and in the neighbourhood, though of course there are places where they are light. Peaches also good; the trees in general look healthy, and with a little more hot weather the wood and fruit-buds are likely to get properly matured.—M. Saul.

—— **Grimston Park, Tadcaster.**—Apricots are under an average, but promise to be good as regards size; they are mostly confined to the upper part of the wall; our standard variety is Moor Park. Apples are the lightest crops that we have had during these four years; the standard kitchen Apple in this locality is a variety called Cockpit; it generally bears heavy crops of useful fruit, and is a good-keeping sort. Cox's Orange Pippin is proving our best dessert Apple; young trees of it three years planted are bearing good crops when most others have failed. Although we are only some ten miles from the home of Ribston Pippin, I have not seen a healthy tree about us; they die off with canker so severely. Cherries are average crops, Morellos being best; we invariably get our finest fruits of this variety from some large pyramidal-shaped trees growing in one of the kitchen garden borders. Pears are light crops, Louise Bonne of Jersey being the only sort that has a full crop on it; Marie Louise, Williams' Bon Chretien, Winter Nelis, and Easter Beurre are our best sorts. Plums are full average crops, Jefferson's, Green Gage, and Victoria being the best and surest cropping varieties. Peaches and Nectarines are good and the trees clean and healthy; Early York, Royal George, and Late Admirable are the best Peaches, Elruge and Violette Hâtive holding the same position as Nectarines. Of small fruits Strawberries and Red Currants have been excellent crops, but the late hot weather caused the former to be of short duration. Other varieties, viz., Raspberries, Gooseberries, and Black Currants are full average crops, taking the locality generally. Our soil is a stiffish loam, resting on limestone, and suits stone fruits well. —H. J. Clayton.

—— **Ribston Hall, Wetherby.**—Peaches in this neighbourhood are good, and the trees clean and healthy. Nectarines the same. Apricots good and clean. Plums very thin, trees sadly infested with fly. Cherries a good crop. Pears very thin, owing to the bloom having got injured by frost. Keswicks and Manks Codlin Apples are good, also King of the Pippins, Hawthornden, Bridgwater Pippin, and early Julian; on others there are very light crops. Strawberries excellent; Eleanor, Dr. Hogg, British Queen, and Keen's Seedling are our favourite sorts. Eleanor is grown by the acre in this neighbourhood for the Harrogate market; it is the best late sort, and travels well. Red and White Currants we were obliged to prop up. Black Currants very thin. Medlars a very good crop. Raspberries plentiful.—Thos. Jones.

—— **Sheffield, Wortley Hall.**—Prospects of fruit were most encouraging in spring, but with the exception of Strawberries, Cherries and Raspberries, which are good, and other small fruits which are about the average, the crops are not great. Pears are better than Apples, but they are not plentiful, and Apples are poor; Lord Suffield and the Codlins being the best crop, as they are in this district, which is high and inland. The Pears which do best with us are Marie Louise and Louise Bonne on walls and espaliers. These two afford our main supply, and are generally a good crop and excellent in quality, though late with us, sometimes keeping till Christmas. Jargonelles also do well on walls and standards; none of the finer kinds ripen properly. —J. Simpson.

—— **Thorpe Perrow, Bedale.**—In this neighbourhood we had prospects of a good crop up to the 13th of April, but on that morning we had 11° of frost, and on the 15th 10°, amounts which proved too much for the Apples, Pears, and Plums. In many places not one bloom was left alive, and the whole may be summed up as follows:—Apples much below the average; Apricots a good crop and excellent in quality; Peaches good; Pears moderate, especially late sorts; Plums much below average; Cherries not good, with the exception of Morello; Black, White, and Red Currants abundant, and very fine; Gooseberries a bad crop generally; Nuts nearly all killed on the 13th of April, both in gardens and hedge-rows.—William Culverwell.

NORTHERN DIVISION.

Cumberland.—Whitefield House, Carlisle.—This has been the worst season for fruit on record. The first show of Apple, Pear, and Cherry blossom was destroyed by prolonged cold and drought in early spring. Later on, there was a large amount of second bloom, which offered to set well. About a week after Ascot Races we had a terrible hurricane of wind without rain, which laid even dwarf fruit trees and many shrubs prostrate, uprooting some. Gooseberries, for which we are famous in the north, are a complete failure. I should say that two Gooseberries to each bush are above an average, but the great bulk have none at all. Bushes, however, look healthy, and are extrardinarily full of new wood, like dense Furze or Broom bushes. Black Currants in shady places numerous, but small from want of moisture. Red and White Currants small and tasteless. Strawberries the same. Raspberries plentiful, but the birds are devouring them all from want of grubs and insect food. The only Apples I see on the espaliers are Normanton Wonder, which never entirely fails; it is generally an immense bearer, and keeps well. Lord Suffield crops well here, but must be used immediately, as it will not keep more than a week or two. We generally depend on Keswick Codlin and Ribston Pippin, two excellent old standard sorts, but they have failed both last year and this. Many good old sorts are, I am afraid, losing their constitution and wearing out.—J. Gillbanks.

Durham.—Lambton Castle.—Fruit crops in this locality are, upon the whole, thin, Apples and Pears being far below the average. Pears are best represented by Passe Colmar, Soldat d'Esperen, Louise Bonne of Jersey, Knight's Monarch, Easter Beurre, Beurre Incomparable, Hazel, Green Yair, Seckle, Flemish Beauty, and Swan's Egg. Apples by Lord Suffield, Golden Pippin, Kymer, Cellini, and King of the Pippins. Although thin, cooking sorts are better than dessert kinds of Apricots; we have a good half crop clean and free from maggot. Peaches and Nectarines are thin. The early sorts of Cherries were destroyed by frost; late sorts are a good crop and of excellent quality. Morellos thin but good. Plums thin, late blossoms only having set. Strawberries plentiful, but somewhat unsatisfactory after the first gathering, the plants drooping to the ground, owing to the prolonged drought; Duc de Malakoff is our best Strawberry, but President, James Veitch, Mammoth, Amateur, and Elton also do well. Gooseberries thin but good, the hot weather causing the exposed fruit to drop. Currants and other small fruits plentiful; the mulching of all small fruits has greatly added to their well-being here, as the drought and heat were great. Damsons, Medlars, Filberts, Mulberries, Quinces, Almonds, and Walnuts are all short crops, the trees here being young and exposed.—J. Hunter.

Northumberland.—Shawdon Hall, Alnwick.—Last year was one of the most abundant fruit years ever remembered in this district; this year fruit crops are meagre in the extreme, a result wholly due to the severity of the spring and early summer months. No amount of protection could save the blossoms. Apricots and Pears suffered the most. Pears on west walls that came later into blossom are in some places an average crop, and in some localities may be seen a fair sprinkling of Peaches on walls, while in others the whole crop could almost be counted on the fingers. The loss of the Apple crop will be most felt. The later and hardier varieties have suffered less than the earlier sorts; still, the crop is short and deficient in every place that I have seen. This is not to be wondered at when I state that the thermometer fell in the garden here to 24° in the second week of May. Every succeeding year I am more and more convinced that we do not possess an Apple better adapted for a general crop in the north of England than the fine old Cockpit. The introduction of dwarf trees into our gardens has given facilities for planting a greater varieties of Apples, but many of them will be found unsuitable to the district, and they will have to be discarded or grafted with old and tried sorts. Plums are in many places a fair average crop, and the trees are clean and healthy. Crops of small fruits are sadly deficient, Gooseberries especially. Currants are, perhaps, rather more abundant. Strawberries good and of fine quality in late places. Raspberries a fair crop, but late. There is a

variety of this fruit grown in many gardens in this district named the Northumberland Fillbasket. It was discovered by a seedsman in Alnwick, named Macfarlane, growing in a wild state in some place about his nursery-ground. It is distinct in growth and flavour of fruit, and it bears abundantly in some gardens. With me it grows very dwarf, and the fruit is excellent in flavour, round, and of average size, and I should think it would prove well adapted for small gardens, as it may be planted thickly, and needs no support.—J. Thomson.

New Melons.—Has the Melon (see p. 124), in "A. W. H.'s" opinion, attained to such perfection that all attempts to improve it are useless? If this be not the outcome of his remarks, I am unable to find any other. Mr. Richard Gilbert has produced several very fine and superior sorts of Melons, and deserves what credit is due for his labours. If the Melon in question, First Lord, proved to be so good as to elicit a high opinion from two gentlemen who are as good judges of flavour as any in the kingdom, why should we discourage him? No doubt Melons are already sufficiently productive, and they are, as a rule, quite large enough. Very large Melons are inconvenient. What is wanted, however, is improved flavour, and that constant. If Mr. Gilbert or any one else can get us a variety having the richest flavour allied to other good qualities, let him by all means; and let us not discourage such labours, even though they be slow and sometimes disappointing.—A. D.

Select Strawberries.—Kindly name a few of the best Strawberries both for flavour and productiveness. I have got the following, and wish to add a few others, viz., Black Prince, Keen's Seedling, British Queen, Elton Pine, Duc de Malakoff, Sir Joseph Paxton, Vicomtesse Hericart de Thury, and Victoria. I have heard that Princess of Wales is as early as Black Prince, and superior to it in flavour; if such be the case it would be desirable, as the latter does well with me.—Reader. [In addition to the Strawberries mentioned, the following would give satisfaction, viz., La Grosse Sucree, a very early sort, and preferable to Black Prince as regards flavour; Alexander II., large and handsome in shape, and excellent in flavour, a second early kind; President, another second early, one of the most prolific Strawberries grown, and good in flavour; Lucas, a Belgian variety, very large, handsome in shape, and well flavoured; James Veitch, a large, deep, crimson-coloured variety, a great cropper, and first-rate in flavour. For the latest varieties, Elton Pine and Eleanor are still the best, the former being highly valued for preserving by some growers, although I find the Old Scarlet still the best for that purpose. Princess of Wales I have never grown, although I know that it is highly recommended for its earliness and flavour.—William Tillery.]

The Superuberation of Early Potatoes.—Since the rains which fell on the 1st and 2nd of August I find here that some of the early Potatoes are showing signs of superuberating. The new variety, Porter's Excelsior, seems, on taking up the crop, to be very much grown, and I am afraid that others are in the same state. I should recommend all growers to raise their early and second early crops of Potatoes for fear of the tubes being deteriorated by superuberation. The late crops are not ripe enough yet to take a second growth, and now that rain has fallen they may escape. Last year the disease appeared virulently about this date in August, but there is no appearance of it yet, the weather being colder and drier than it was then.—William Tillery.

Campanula pyramidalis.—I have just seen a row of this 40 yards in length on a narrow border between a gravel walk and garden wall. At the back of the Campanulas is a row of Hollyhocks of various kinds, and the effect produced is striking and beautiful in the extreme. If anything could improve it it would be a somewhat larger proportion of blue. To provide for this I should be glad to know if seed of the Campanula would come true to colour, or if the old roots can be kept over for flowering another season.—L. W. [This Campanula comes perfectly true from seed and flowers the second year if liberally treated, but it is generally increased by means of side-slips taken off after the plants have done flowering. To have this plant in perfection in pots it should be treated as a subaquatic by placing the pots in 1 in. or 2 in. of water.]

The Alexander Peach.—Mr. Watkins, of Palmetta, under date of June 28, says:—"Alexander ripe here June 19-23; perfectly sound, full medium size, highly coloured, very fragrant and fine. Hale will not be ripe under ten days yet, as they are just colouring. Beatrice, Amsden, and other early kinds were cut before freeze of 20th March, and killed. Season twenty days or more late. I have little doubt but that Alexander will ripen earlier from the bloom than any known variety." Messrs. Silva and Son, of Newcastle, California, say, May 31st:—"Our Alexanders are beginning to colour up. They will be large and fine this year. We are still satisfied that they are the earliest-known Peach." A gentleman in South Carolina reports the Alexander ripe, this backward season, 11th of June, large and fine—the best early Peach he has ever seen."—"Prairie Farmer."

HERBACEOUS PLANTS FOR THE WILD GARDEN.

"M. L. W." wishes for a list of effective herbaceous plants to intersperse amongst his ornamental trees in a wild garden. I should say that there are at least 500 kinds which would succeed in ordinary soil, and particularly in a climate like that of Carnarvon. Your correspondent should procure "The Wild Garden," from which I first took the idea of mine, and in which he will find lists of plants for all soils and positions. As we require a good stock of plants to make an effect in a large wild place, and as many are rather expensive to buy, it is better to increase by seed or division in the garden proper, as all plants naturally increase more rapidly where they have not to struggle with the surrounding herbage. Amongst appropriate subjects of fine habit and foliage the following must not be omitted:—Gunnera scabra (rich soil and shade), Pampas Grass, Arundo donax (very fine), A. conspicua, Telekia cordifolia, Bocconia cordata, Heracleum in variety, Centaurea babylonica, Phytolacca decandra, Ferula glauca, tingitana, and communis, Spiræa Aruncus, Yucca in var., Crambe cordifolia, Tritoma in var. (interspersed amongst the Yuccas), Datisca cannabina, Rheum Emodi, palmatum, and officinale, Polygonum sacchaliense and cuspidatum, all the Acanthus tribe, Tree Peonies, &c. Most of the more vigorous, hardy, herbaceous plants will do capitally amongst the Grass and Ferns, and with me the most effective and easily grown are large clumps of Iris germanica in variety, herbaceous Peonies, Achillea Eupatoria, vigorous kinds of Aconitum, Actæa racemosa and spicata, Agrostemma coronaria, Alstrœmeria aurea, Aquilegia vulgaris, Foxgloves, Asters in variety, Carduus eriophorus and heterophyllus, Campanula Trachelium and longifolia, Centaurea montana, Cineraria macrophylla, Fuchsias in var., Coronilla varia, Delphiniums, Sweet Williams, Doronicums, Echinops in var., Elymus glaucifolius, Epilobium, Eryngium in var., Eupatorium purpureum, Funkia in var., Galega in var., Geum coccineum, Helenium autumnale, Helianthus orgyalis and multiflorus, Hemerocallis in var., Hypericum calycinum, Lythrum roseum superbum, the cheaper kinds of Lilies such as L. tigrinum, candidum, pyrenaicum, &c., will do well in partial shade; Linaria dalmatica, Lupinus polyphyllus, Lychnis chalcedonica, Monarda in var., Œnothera marginata and taraxifolia, several of the Orobus family, Papaver orientale and somniferum (from seed), Pascalia glauca, Phlox in var., Polemonium cœruleum, Polygonatum multiflorum (in partial shade), Pyrethrum in var., Rudbeckia in var., Saponaria officinalis fl.-pl., Solidago in var., Sedum spectabile, Silphium perfoliatum and laciniatum, Symphytum in var., Tanacetum vulgare, Tradescantia in var., and Trollius in var., will all succeed well in a wild place amongst Grass and other herbage. Your correspondent is unfortunate in being obliged to be away from home in the spring, as that is perhaps the best time for the wild garden, when carpeted with Primroses, Crocuses, Anemones, and many others. The bank he alludes to should be planted with Clematis montana, Everlasting Peas, Honeysuckles, and others of the same habit. I hope I may have been of some use to him in the list I have given, and I am sure that no one who once commences a wild garden will ever repent it, or be without a very fascinating occupation. Oxon.

NOTES AND QUESTIONS—VARIOUS.

Cyananthus lobatus.—A rather uncommon but very pretty plant now in bloom here is the Himalayan Cyananthus lobatus. It grows about 4 in. in height, with large, blue, funnel-shaped flowers with white centres. The blooms, though sparingly produced, are very effective.—Oxon.

Lobelia "Lustrous."—This is certainly a great acquisition. I saw it the other day in fine condition, both as regards colour and continuous blooming; when more generally known it must become a favourite. It had a striking effect in some large carpet beds—a quantity grown in pots was equally good. I know of no variety to equal it in any way.—H. Harris.

Zauschneria californica on a Wall.—I saw this in fine condition last year at Dawlish. It was on a high wall which formed the boundary of a gentleman's pleasure grounds, the soil inside where it grew being raised so as to reach nearly or quite to the top of the wall. Here it seemed at home, and formed a splendid scarlet coping or fringe to the wall many yards in length and about 18 in. in height. With me, in every situation, it invariably perishes in the winter.—J. M., *Hawkchurch, Axminster, Devon.*

Lifting Early Potatoes.—The late drought has accelerated the ripening of early kinds of Potatoes considerably, and although the crop is scarcely so heavy as in some seasons, the quality is all that can be desired. In most cases it will be expedient to lift early kinds at once, as should wet weather set in a second growth would be induced which would spoil the quality of the tubers. Ground cleared at once might be planted with Winter Greens and Turnips.—J. G.

Chamæpeuce Cassabonæ and diacantha.—These are invaluable in the flower garden, the compact habit and dense green of Cassabonæ being heightened by contrast with the silvery spines of C. diacantha; as edgings to large beds of tall plants, or as single specimens in carpet beds, or as masses, the Chamæpeuces are always effective. Seeds of them sown in February or March, and pushed on in gentle heat, produce fine plants by May.—James Groom.

No. 248.] SATURDAY, AUGUST 19, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

OUR NATIVE PLANTS AND FERNS IN THE WILD GARDEN.

BEFORE the introduction of the "wild garden" it was difficult to counsel the general cultivation of our native plants in the garden, although many of them often crept in unsuspectedly, along with the "Alpines"; but now that the "wild garden" is being zealously carried out by many who wish to reserve for themselves a nook where the conventionalities of strict gardening shall not enter, the difficulty no longer exists. In the wild garden will be found a home for our rarer and more beautiful British plants; a place where they may establish themselves and grow to their full size without the space they occupy being coveted for other plants. Afterwards on their gaining sufficient numbers they may be transferred to the neighbouring parks and woods, where they will soon add new beauties to the scenery. The fact of their not being found growing wild in a district does not in most cases show that there is anything in the soil or situation which will not suit them. Where plants have been introduced from one part of the country to another they have been generally found to thrive well, and some of our plants, particularly annuals, now considered natives, are really natives of other countries; for instance, Adonis autumnalis, with beautiful crimson flowers, which is to be met with in Kent, and the common Flax (Linum usitatissimum) now form part of our flora. Ferns particularly are local in their distribution; in some districts not a Fern is to be met with growing wild for many miles; the Male Fern (Lastrea Filix-mas), the Lady Fern (Athyrium Filix-fœmina), the Hard Fern (Lomaria Spicant), the common Polypody (Polypodium vulgare), and a few others, are to be found either plentifully or sparely distributed in some part or other of most counties, but many of the others are confined to certain districts; even the beautiful Royal Fern (Osmunda regalis), which grows to a height of 5 ft. or 6 ft. in some places, is so scarce in others as sometimes to form the object of a journey of several miles to a place where it grows. Collecting where Ferns are scarce is highly reprehensible; specimens should always be procured from where they are abundant, and in places where they are scarce they should be carefully preserved. The collector should bear in mind that the plants are generally to be had through a nurseryman. Hitherto the culture of British Ferns has been almost exclusively confined to the hardy Fernery, from which other plants have been carefully excluded; and here the effect of the more beautiful varieties has generally been marred by their being surrounded by many weak and unthrifty specimens, which, when in such a condition, are not worth the space allotted to them. This has generally been done with the view of making a collection of many varieties, and from an idea that Ferns thrive better when grown all together. In the wild garden a nearer approach to Nature can be achieved, and the Ferns will be found to thrive better when planted in suitable situations amongst and sheltered by other plants, and the brightness of the surrounding flowers will show off to greater advantage the elegant and fresh vegetation of the Ferns. In planting the Ferns care should be taken that such as the Limestone Polypodium (P. calcareum), the Oak Fern (P. Dryopteris), the Beech Fern (P. Phegopteris), the Mural Spleenworts, &c., be slightly elevated and supplied with sandstone for the rhizomes (those that have them) to run over, and that such as Polypodium vulgare and its varieties, and the Parsley Fern (Allosorus crispus) be planted in the hollows of tree stumps, and after they once take hold, they will give little further trouble. An irregular piece of water or a small stream running through the wild garden adds an additional charm to it, and those who are fortunate enough to possess, or be able to devise such, can grow many beautiful British plants with which it would otherwise be impossible to succeed. In the water may be grown the beautiful Water Violet (Hottonia palustris), with its spikes of flowers like the light variety of Primula japonica, the Frog-bit (Hydrocharis Morsus-ranæ), the Nymphæa-like Villarsia (V. nymphæoides), the Pond-weed (Potamogeton), particularly the Seaweed-like P. crispum, the common White and Yellow Water Lilies, and many others, while in the shallow water may be planted the flowering Rush or Water Gladiole (Butomus umbellatus), bearing large heads of pink and white flowers, the beauty of which was spoken of even in the time of Gerard, who says—"The Water Gladiole or Grassy Rush, of all others, is the fairest and most pleasant to behold, and serveth very well for the decking and trimming up of houses, because of the beautie and braverie thereof." We have also the Arrow-head (Sagittaria sagittata), the Buck-bean (Menyanthes trifoliata), with Kalmia-like flowers, the Marsh Marigold (Caltha palustris), with shining orange flowers, the Equisetums, the Cats'-tails (Typha), Poa aquatica, &c.; while round the edges the Royal Fern (Osmunda regalis), the Marsh Fern (Lastrea Thelypteris), and other varieties liking moist situations, will grow luxuriantly, and assume altogether a different aspect from that which they bear when grown in the ordinary garden. For other parts of the wild garden we have the lovely blue Gentians—G. verna and G. Pneumonanthe—the pretty, dwarf-growing Dryas octopetala, with its eight shell-like white petals and yellow centre, the Wood Anemone (A. nemorosa), single and double, producing a profusion of white flowers in early spring, the common red Fumitary (Fumaria officinalis), the Pasque-flower (Anemone Pulsatilla), having large purple flowers, the common Fritillary (Fritillaria Meleagris), the flowers of which look like mosaic work, many varieties of Trefoil, particularly the Strawberry Trefoil (Trifolium fragiferum) which is very pretty when covered with its shaded pink flowers; the British Orchids, too, which when grown in clumps are very handsome, will in the wild garden be safe from the spade, to which they, in common with other deciduous plants, too often fall victims when grown in the herbaceous border. The Golden Saxifrage (Chrysosplenium oppositifolium) and the neat little Moscatel (Adoxa Moschatellina) are small, compact-growing plants, and are in danger of dying out if kindly hands be not found to care for them. For plants of larger growth we can obtain the large Willow-herb (Epilobium hirsutum), also the Rosebay Willow-herb (E. angustifolium), and its white variety, the Loosestrifes (Lythrum Salicaria, purple, and Lysimachia thyrsiflora, yellow), the Foxglove (Digitalis purpurea), the Ox-eye Daisy (Chrysanthemum leucanthemum), the curious Trillium-like Herb Paris (P. quadrifolia) to be found at Finchley, and innumerable other beautiful plants. Even some of the Thistles, such as Silybum Marianum, with its shining green leaves netted with white; the Sea-holly (Eryngium maritimum), and the Teasels (Dipsacus sylvestris and D. pilosus), are well worthy of a place, and quite as ornamental as many plants imported from other countries. The Grasses, also, should not be forgotten, many of the varieties being very elegant; for example, the one-headed Cotton Grass (Eriophorum vaginatum), and the many-headed Cotton Grass (E. polystachyum), with their large, flossy, white heads, and the Lady's-tresses (Briza maxima and B. minor). For rambling plants the Honeysuckle, the different varieties of Wild Rose, and the Traveller's Joy (Clematis Vitalba), will of course be admitted. Many of our best British plants are to be obtained from one or two London nurserymen, who can supply at any time specimens in pots. Where quantities are required for the wild garden they may be obtained by exchange of seeds or plants of desirable kinds made between friends living at a distance from each other, or by collecting a few specimens of any uncommon kind. Many coveted plants are collected in this way by amateurs, but in consequence of the treatment after collecting they generally die. The usual course is to plant the specimens out as soon as they arrive home, and when this is done the chances of the plants establishing themselves are but slight, not so much because they object to the change in either soil or situation, as because they are generally taken in full vigour, and in removing them some of the large and most of the small roots being broken, the plants in consequence, when planted out, cannot at once supply the vigorous heads with sufficient nourishment, and before new roots can be made the specimens

often wither and die. It is best on receiving hardy plants, either British or Alpine, to pot each plant separately into rather small pots, and place them under the shade of a north wall or in a cool, shady pit, keeping them well supplied with water until they are well rooted, when, if strong-growing kinds, they may be planted out at any time of year; but if known to be delicate, they should be kept in pots and placed in a cold frame or protected with mats until spring, when they may be planted out. When treated in this manner it is a rare thing to lose a plant, and by attention to the above instructions much disappointment will be spared. By carefully planting each kind in a clump composed of several plants, and in the proper soil and situation, many beautiful British plants which have been considered delicate will be found to thrive well. One of the chief causes for some of the hardy plants, particularly the Ferns, not thriving well in the open garden, is the habit of depriving them of their natural winter protection by cutting off the leaves and fronds as they turn yellow; this should never be done in the wild garden, the decaying foliage may be bent down when it appears too conspicuous, or moved aside when covering a smaller plant, but if left on for the winter it not only protects the plants themselves, but saves numbers of seedlings which would otherwise be lost.

J. O'B.

COTTAGE GARDENING.

The Greenhouse.

In the erection of a greenhouse and its interior arrangements, the purpose for which it is required should be fully considered beforehand. The span-roofed form is the best for plant culture, as it admits plenty of light on all sides; but where there is already a suitable wall in existence, a lean-to of the same size could be built cheaper, and in the winter less fuel would be required to keep out frost. If merely required as a hibernatory for bedding plants, no fire-heat will be required beyond what would be necessary to keep out frost; and for a small house, that only requires a brisk fire occasionally, a brick flue will answer the purpose, as it heats quickly, and from its greater body of material does not cool so rapidly as hot-water pipes after the fire is out.

The main features in the successful management of bedding plants are—(1) Put the cuttings in early; Pelargoniums in the open air fully exposed, and whether in pots or boxes they should be allowed room enough to form sturdy growth. Verbenas and similar plants will root better and more quickly in a frame or pit where they can be kept close during the day, but a little air should be given for two or three hours early in the morning to drive out damp. (2) Early in October when the plants are removed to their winter quarters, all pots should be washed; and promptitude at all times is necessary in the removal of dead or decaying leaves, without waiting for a general clearing up, as they not only look untidy, but all decaying substances encourage damp to [settle round the plants, which in the short days is often more fatal than cold. (3) Water sparingly and with care—by this I do not mean that only a small quantity at a time should be given, for plants at all times when dry should have sufficient to moisten all the soil, but do not give water till the plants are dry, applying it in the mornings of fine days as far as possible, so that any damp may dry up before night. (4) Ventilate abundantly on all favourable opportunities; this is a principal point. When not absolutely freezing, or the wind so strong as to blow the pots off the shelves, the lights should be opened early in the morning and not closed till night, except in rainy weather. (5). Use as little fire-heat as possible, consistently with keeping the thermometer in the house from falling below the freezing point; but it may occasionally be necessary during a long period of dull, damp weather, to light the fire in the morning for an hour or two to expel damp. The chief errors in the management of bedding plants are too much artificial heat and too little ventilation. Every one who grows bedding plants in sufficient number to require a house for their keeping through the winter will be sure to have a small hot-bed at work in March for striking cuttings and raising tender annuals—Verbenas, Ageratums, Heliotropes, and most of the bedding plants commonly employed will strike in a hot-bed in spring, and make far better plants than those struck in autumn. In March a few seeds of Celosias, Balsams, or other tender annuals, may be sown and placed in the hot-bed; cuttings also of Zonal Pelargoniums, Fuchsias, and double Petunias will root quickly there, and speedily produce small-flowering plants. Thus a quantity of useful specimen plants may be grown on for furnishing the greenhouse in summer, and for vases in the house.

One of the greatest evils in connection with the introduction of the modern bedding system into small gardens is the fact of its not only having banished from the borders many of the best hardy plants, but it has also gradually but surely taken possession of the greenhouse or other glass structures, to the entire exclusion of every other plant of any value. I willingly grant that the bedding system, when kept within reasonable limits, has a very brilliant effect in summer; but where it once obtains a footing, it has a tendency to monopolise, not only all the borders in the garden, but every bit of space under glass as well, and to crowd out every plant that will not submit to the same treatment that bedding plants require.

So far as the culture of plants is concerned, it is not the most interesting way of furnishing a greenhouse; and all who love plants and flowers for their own sakes must grow weary of a system that crowds the work of twelve months into the enjoyment of three, and leaves a dreary blank at the end, with every inch of space in the greenhouse occupied with cuttings for the next year's campaign, instead of being furnished with plants to brighten up the rooms in winter. It is a relief to turn from the greenhouse I have just endeavoured to describe to the house of an amateur not yet famed for his beds of Pelargoniums and other plants in summer. There you will always find something to interest and instruct; he has one continual round of floral beauty. In addition to Primulas, Cinerarias, Calceolarias, Pelargoniums, Fuchsias, &c., which follow each other in succession, there are Camellias, Azaleas, Lilies, and others too numerous to mention now, some of which have very pleasing associations connected with them. Bulbs and Lilies of the Valley will of course be a rare treat in early spring before vegetation begins to move in the open air; but where the greenhouse is kept for the culture of greenhouse plants alone the most interesting way of arranging the interior is to remove all the stages and have the floor of the house arranged in beds, with the paths so laid out as to make the most of the surface. If the house be lofty the beds in some instances might be raised and surrounded with a rockwork edging covered with Lycopodium, Sedums, Linaria, &c. In the beds, the soil of which should be specially prepared, might be planted Camellias, Daphnes, Luculias, Acacias, and a host of other subjects, both flowering and with ornamental foliage, so selected and arranged as to have always one or more specimens in flower. Plants so treated would have an admirable appearance, and they would not require one-tenth part of the labour that plants demand when grown exclusively in pots. The back wall could be clothed with creeping plants or covered with virgin cork, a quantity of pockets being left for Ferns, &c. Another mode of covering the back wall would be to plant all the numerous varieties of Ivy-leaf Pelargoniums on it, and train each kind up separately, giving each a certain amount of space. This would at all times be a most interesting feature. One or two Tea-scented Roses must assuredly find a place, either on the roof or trained up a pillar. Maréchal Niel, planted either in the front, or at one end, would ramble over the roof. I find that when close to the glass in a house where it has plenty of ventilation it keeps on flowering at intervals as new growth is made all summer. Both the white and red varieties of the Lapageria would do well planted in a good bed of peat well drained; when established they would ascend into the roof and form festoons, and the flowers would be lovely for cutting. How beautiful would some of the old-fashioned Sweet-scented Pelargoniums be to train up a pillar or over an arch, while their leaves would be delightful for mixing with cut flowers! The Heliotrope too, should find a place, for when planted out under glass, it assumes the growth and appearance of a shrub, nearly always in flower. A Tacsonia or Passion-flower might be trained over the roof in summer, but it would require watching and thinning occasionally; otherwise it might shade too much, and it should be spurred in early in autumn. Fuchsias and many other things might be planted, with a certainty of their thriving if there were sufficient space, but to crowd the

plants would not only be unsatisfactory, but in the end be disastrous. Baskets of creeping plants might be suspended from the roof; in short, such a house would be a delightful retreat at any time, and from the plants being all, or nearly all, planted out, there would be less work and less anxiety attending their successful development. Where there is a pit as well as a greenhouse, many things, such as bulbs, autumn-sown annuals, &c., might be brought on till the flowers were nearly opening, and then introduced and grouped about wherever space could be found, and colour was desirable. For a house of this kind containing valuable plants. An efficient heating apparatus would be indispensable, and there is nothing so reliable where heat is required pretty regularly during the winter months as hot water. There are many forms of boilers, all more or less efficient, but what I think is more especially required for small houses is a good gas-heating apparatus. Stoking is always dirty work, and, if deputed to any one not thoroughly interested in the work, is very apt to be ill done, and then a good deal of waste is incurred; but if the gas could be lighted when necessary much time would be saved, and the work cleanly done, with less temptation to neglect it. In the list I give below it is not desirable that all should be planted out. Biennials, such as Primulas, Cinerarias, Calceolarias, &c., will do better in pots, and kept in a cool frame all summer and autumn. The same remark is also applicable to Cyclamens, Chrysanthemums, and Heaths. I should recommend the main features only to be permanent, as the other groups could be changed occasionally for variety's sake.

List of Greenhouse Plants.

Azaleas, various
Abutilon Boule de Neige
Abutilon Thompsoni
Acacia ornata
„ Drummondi
„ grandis
Adenandra fragrans
Agapanthus umbellatus
Bouvardia, various
Brugmansia sanguinea
Calceolarias, from seed sown in July or August
Camellias, various
Chamærops excelsa
Cheiranthus odoratissimus (night-scented Stock)
Chorozema varium nanum
„ Lawrenciana
Chrysanthemums
Cineraria (seeds sown in March and May)
Cannas, various
Citrus (Oranges), various
Cyclamen persicum (hybrids)
Cytisus Everestianus
„ racemosus
Daphne indica alba and others
Dracæna indivisa
Echeveria, various
Epacris „
Epiphyllum „
Erica Wilmoreana
„ hyemalis
„ candidissima
„ gracilis vernalis
„ Cavendishi
„ ventricosa grandiflora
Eriostemon buxifolium
Ficus elastica
Fuchsias, various
Habrothamnus elegans
Heliotropes
Hydrangeas
Kalosanthes
Mignonette
Myrtles
Nerium (Oleander), various
Pelargoniums, many kinds, including Cape, Zonal, Ivy-leaf, &c.
Petunias, double
Pimelea Hendersoni
„ hispida
Plumbago capensis
Primula sinensis, from seeds in March and April
Polygala cordata
„ Dalmatiana
Richardia æthiopica
Solanum pseudo-capsicum and others
Tree Carnations
Vallota purpurea
Veronica Blue Gem
„ Gloire de Lorraine
Witsenia corymbosa
Yucca aloifolia variegata

CLIMBERS.

Jasminum grandiflorum
Lapageria rosea
„ alba
Passiflora Colvilli and others
Rhynchospermum jasminoides
Tacsonia insignis

Ferns for Greenhouse Culture.

Adiantum cuneatum
„ assimile
„ pubescens
„ Capillus Veneris
„ formosum
„ setulosum
„ trapeziforme
„ reniforme
Asplenium dimorphum
„ flaccidum
„ Veitchianum
Asplenium marinum
Alsophila australis, a tree Fern
Cyrtomium falcatum
„ Fortunei
Cheilanthes farinosa
Cyathea dealbata, tree
Davallia canariensis
„ elegans
„ Novæ-Zelandiæ
Dicksonia antarctica, tree
Doodia aspera
Hypolepis repens
Lygodium scandens, climbing Fern
Pteris tremula
„ scaberula
„ serrulata
„ cretica albo-lineata
Platycerium alcicorne
Platyloma falcata
Woodwardia radicans

If the planting-out system be adopted, the soil in the beds or borders should be about 2 ft. thick, resting on a bed of stones or brick-bats from 9 in. to 12 in. thick for drainage; the most suitable compost is turfy loam and peat in about equal portions, chopped up with the spade, and every bit of stick or root that is likely to produce fungus picked out. A few lumps of sandstone, a few barrowfuls of broken charcoal, and a few bushels of soot might be added—the two former to keep the soil open, and the latter to enrich it and stimulate the growth of the plants. The soil should be made thoroughly firm before planting, and filled well up, for when the fibre in the borders decay, the borders will go down; and if Camellias and similar plants be planted, it will be dangerous to make up the border by adding soil to the top. Hard-wooded plants will turn sickly and die if their collars be buried too deeply. E. Hobday.

THE LIBRARY.

HOW TO GROW STRAWBERRIES WITH SUCCESS.*

The author of this little pamphlet has done good service by showing how the culture of Strawberries may not only be made a source of recreation, but also a remunerative occupation, even in a northern district where land is rented at £5 or £6 an acre, and where manure is valued at 8s. per load. Mr. Lovel's practice may be summed up in a few words—he uses strong well-rooted runners, gives copious manurings, and tills deeply, three points on which his success chiefly rests. As a preparatory crop before planting the runners, early Potatoes are recommended, the Potatoes to be dug and off the land by the end of July, or three weeks before the general crop is ready, and at a time when they fetch from 2d. to 3d. per lb. in the northern markets; a good sound crop of this kind realises something like £100 per acre. After the Potatoes are lifted, the ground is dug two spits deep, keeping the top soil at the top and giving a good barrow-load of manure to every twenty or thirty plants. Runners are taken from first year plants, and from those only which are most fruitful; these after they are rooted, are removed to a well-manured nursery bed, where they are watered and shaded, and from whence they are transplanted in the autumn. Thus treated, they bear crops of fine fruit the first season.

I have, says Mr. Lovel, grown 1 lb. of fruit per plant from fifty to sixty plants in succession, some of the fruit weighing 1 oz. each. I can grow Strawberries better in quality and larger in size from plants of the first season than I can from the second and third year plants. The largest Strawberries I have grown (up to the present) weighed 2 oz. each. I pulled from a row of thirty plants, last summer, eight Strawberries that weighed 1 lb. There is no fruit cultivated that will adapt itself to almost any situation like the Strawberry. In some localities it will grow without any trouble at all. Some measure success by this rule—"Will it pay?" I feel as if I should like to reply to such a question by saying, never mind if it does not pay, so long as the cultivator is rewarded with a crop of fine fruit; but I am also prepared to show that Strawberry growing may be made to pay, as well or better than any other fruit. I plant in rows, 30 in. apart by 15 in. in the row, and the second year I remove every other plant, leaving them 30 in. by 30 in. apart.

The following concise rules are recommended as safe guides for Strawberry growers to follow:—

1.—Avoid planting Strawberries on the same land as much as possible. A rotation of crops is sound practice.
2.—Give the land deep cultivation previous to planting. Two spits deep is better than one; but subsoil, don't trench.
3.—Give the land plenty of manure both before and after planting (the latter in the form of mulchings), and thus enable it to retain a supply of moisture during dry weather.

Under this system of culture I have grown upwards of 1 lb. of fruit per plant, which is nearly 3 lbs. of fruit per square yard. A celebrated Strawberry grower last year said that his plants of British Queen had produced eight quarts of fruit per plant. Now eight quarts of fruit with me weigh 12 lbs. Another account I saw in the papers stated that a certain prolific kind of Strawberry would produce one peck of fruit per plant. Now let us be moderate, and say a crop of Strawberries will produce 1 lb. of fruit per square yard, and if we charge 6d. per lb. for the fruit, the very handsome sum of £120 per acre will be realised. Would not this pay for cultivation and manure, and all other expenses, and still leave a good profit? On some land Strawberries will grow from year to year without removal. This is not the class of land that I cultivate, for I find from two to three crops to be quite sufficient. Nearly all sorts will grow and do well with me the first season, but one-half of those I cultivate do only moderately during the second and third year. I never let

* "How to Grow Strawberries with Success." A Pamphlet by Wm. Lovel, Strawberry Grower, Weaverthorpe, York. Malton: E. Barnby, Wheelgate."

any stand longer than three years. I always dig them up as soon as I have gathered the fruit the third season, and either take a crop of Potatoes the summer following, or give the land a short season of rest, and then replant it with young plants. I have found it a good practice when I wish to replant the same land, to dig the land over as soon as possible, and not plant till the spring following, and if the plants be small not to let them bear the first season after planting. They will thus make splendid plants, and bear an excellent crop. The treatment for the second and third year is as follows, viz.:—To take every other plant out of the row on the second or third year, to keep the land clear of weeds by hoeing, to keep the plants free from runners by taking them off as fast as they appear, to give the plants a mulching of manure in the spring, and to give the land a coat of clean straw as soon as the plants burst into bloom. You will secure abundant crops of Strawberries for three years by this treatment, if you make a good selection of varieties in the first instance. Such sorts as La Grosse Sucrée, Keen's Seedling, Princess Alice, and Refresher, I have found to be very early, of good quality, and robust growers. For mid-season you may select ten or twelve excellent sorts. Six of the best with me are President, The Amateur, Sir J. Paxton, Ne Plus Ultra, La Constante, and Sir Charles Napier. Four good late varieties with me are Dr. Hogg, British Queen, Filbert Pine, and Elton Pine. I have growing at the present between forty and fifty sorts, some of which promise to prove first-rate.

Strawberry growing on this plan might be tried in small gardens and allotments with advantage, and we have hundreds of acres of warm, sunny, railway embankments, which might, with but little trouble or expense, be converted into Strawberry gardens. In this way tons of this fine fruit might be produced on land which is now lying wholly waste. B.

FORCING GLADIOLI.

At the June meeting of the Paris Société Centrale d'Horticulture M. Ramey read a note on the subject of forcing Gladioli. M. Ramey having for several years obtained specimens of early blooms of certain early varieties of Gladiolus, he was induced to suppose that the greater part of the hybrids of G. gandavensis, which form the collections of the present day, might up to a certain point be found capable of being forced in heat. M. Ramey was confirmed in this idea by the fact that formerly certain typical species of the Cape Gladiolus, for instance, blandus, carneus, floribundus, hirsutus, roseus, undulatus, versicolor, &c., were always planted in autumn like most of the Cape bulbs, and were always placed under shelves for the winter, either under frames or mats, or else in pots upon the shelves of Orangeries, cool stoves, or greenhouses. Cultivated in this way these Gladioli often flowered from April to June, at the same time, in fact, as the Antholyzas, Ferrarias, Galaxias, Ixias, Sparaxis, Tritonias, Watsonias, and a number of other genera of these beautiful bulbs, which at one time in the spring formed the ornaments of our greenhouses and the delight of all true lovers of gardening. These plants are but rarely seen anywhere in the present day, except, indeed, in the greenhouses of a few amateurs or in a few botanical gardens. M. Ramey explained his views to MM. Souillard and Bumelet, of Fontainebleau, the clever colleagues and successors of M. Souchet, and expressed his wish to see the experiment tried. These gentlemen, who have every appliance for the work and who have a large experience of this mode of culture, kindly placed themselves at M. Ramey's disposal to carry the matter through, a proposition that M. Ramey was only too pleased to accept. Unfortunately it was somewhat late in the year, the month of February having already commenced; nevertheless these gentlemen went to work, and, in spite of the lateness of the season and of the unfavourable state of the weather, the experiment succeeded so well that at the flower show at the Palais de l'Industrie, which opened on the 29th May last, they were able to exhibit three varieties that had already begun to flower, and a few days later flowering spikes of seven more varieties, viz., G. Monsieur Legouvé, Shakespeare, Walter Scott, Amalthée, Thames, Laure, and Arsinoe. All were shown at the meeting of the Société d'Horticulture. The flowering spikes were splendid, showing the same development and vigour as if grown at the usual season, and the flowers were as large and numerous, and their colours as perfect as if they had been produced under the ordinary system of cultivation. MM. Souillard and Bumelet were of opinion that had the weather out-of-doors been more favourable, that is to say, warmer and moister, the flowers would have made their appearance at least a fortnight sooner. The fact, however, that by judicious forcing the Gladiolus may be made to bear flowers one or even two months before the proper time, has been fully proved. The following is the method of procedure adopted by MM. Souillard and Bumelet. The bulbs were planted on the 15th February in a frame on a bed 18 in. in thickness, made in a trench of equal depth. This bed was composed of a compost of two-thirds of decayed leaves and one-third stable manure, the whole being well mixed and covered with 8 in. to 10 in. of kitchen mould. When the plants reached the height of 18 in. to 20 in. the sides of the frame were removed, because they kept the plants too dark and damp, and entirely replaced by glass frames built up in the form of a gable, so as to get the largest amount of heat and light. While the plants were under the first frames, these latter were kept surrounded by manure. The flowers might have been produced even earlier by digging a trench round the pit and filling it with fresh hot manure, according to the method employed in forcing certain plants and vegetables cultivated in the open air.

In any case, in order to attain their fullest development in size and flower, the Gladiolus gandavensis requires plenty of light and heat as abundant and constant as possible, without which the flower-buds, although well formed, neither increase in size nor expand as long as the weather is dark, instead of which when the sun shines brightly they may almost be seen growing.

A comparative trial made in pots with bulbs planted at the same time seemed to promise interesting results, but the plants produced by this system are very much less vigorous than those planted out in the open ground, besides which their period for flowering appears to be later.

A number of hybrid Amaryllids of the vittata variety, both red and white, that were planted at the same time and under the same conditions as the Gladioli, began to flower abundantly in the middle of May, and were in full bloom on June 8. The Gladiolus can therefore be forced so as to flower in the middle of May, and by planting late the period of flowering, on the other hand, may be retarded until the end of autumn, or at any rate until the first frosts make their appearance. These results are obtained by keeping the bulbs in a dry cellar from the moment they are dug up from the beds until June or even July, and by planting them at these two periods, so as to cause them to bloom abundantly in October and November. They will continue to flower far into the winter if properly protected by glass frames, especially in the south, where the frosts are pretty late. Judging by what M.M. Souillard and Bumelet have done, we do not seem to have made all the use of the Gladiolus of which it is capable for garden ornamentation, the decoration of apartments, and for bouquets. Grown with due care the Gladiolus may be made to yield an uninterrupted succession of its beautiful spikes of flowers during seven months of the year. Cut at the proper period, they will continue to throw out fresh blooms for a whole week, and from having no smell are much preferred by many persons for decorating apartments. Q.

FLORAL DECORATIONS FOR AUGUST.

The month of August will have been looked forward to by those who like a bold, free style of arranging flowers, since it is now that we get, more than at any other season, a great choice of large flowers in many different colours. Lovers of flat decorations will welcome the blooms of Dahlias and Hollyhocks, as means of enabling them to produce effects which can only be obtained by the use of these flowers, while admirers of tall decorations have the opportunity of using in large vases, spikes of Hollyhocks, and in smaller ones spikes of Gladioli, and of several kinds of Lilies. Show and fancy Pelargoniums that finished their blooming in our greenhouses in May, if then turned out of their pots and planted in shady borders, will by this time be again covered with flowers that from the variety of their colours are very useful for cutting, and the best foliage with which to set them off is that of the various sweet-scented, cut-leaved Pelargoniums. The variegated-leaved Sibthorpia, figured in The Garden (see vol. vii. p. 70), proves most useful for the edges of the upper dish of a "March" stand. Campsidium filicifolium, which grows well in an ordinary greenhouse, and does not require stove heat, will be very generally used for twisting around stems of vases, when it becomes more known. Spiræa Thunbergiana, which in the spring had every shoot covered with pretty little white flowers, is now a bush of elegant habit, the leaves being narrow and lanceolate and of a bright pale green. At the present time I know of nothing in foliage more beautiful in a mixed bouquet than young shoots of this hardy shrub. Another hardy, shrubby Spiræa, also not commonly met with, and one which deserves a passing remark from its being exceedingly useful for decoration, is the white variety of S. callosa, a very free bloomer. When the tuberous-rooted Begonias come to be better known, and more frequently grown than they now are, our decorations will exhibit shades

of orange, cerise, scarlet, magenta, and pink, of the beauty and novelty of which only those who have cultivated them can have any idea.

Blue—Campanula, Cornflower, Gentianella, Larkspur, Myosotis, and Pansy.

Purple—Aster, Heliotrope, Hollyhock, Larkspur, Pansy, Phlox, Sweet Pea, and Verbena.

Mauve—Aster, Dahlia, Heath, Hollyhock.

Pink—Antirrhinum, Aster, Begonia, Bouvardia, Carnation, Dahlia, Fancy and Zonal Pelargoniums, Fuchsia, Gladiolus, Hydrangea, Hollyhock, Oleander, Phlox, Rose, Sweet and Everlasting Peas, Sweet William, Verbena, Willow Herb, and Zinnia.

Crimson—Antirrhinum, Aster, Bachelor's-button, Bouvardia, Dahlia, Foxglove, Hollyhock, Loosestrife, Phlox, Pink, Ragged Robin, Rose, Sweet and Everlasting Peas, Sweet William, Verbena, and Zinnia.

Maroon—Carnation, Clove, Dahlia, Hollyhock, and Zinnia.

Scarlet—Begonia, Bouvardia, Carnation, Dahlia, Gladiolus, Lily, Poppy, Salvia, Tropæolum, Verbena, Zinnia, and Zonal Pelargonium.

Orange—Calceolaria, Carnation, Dahlia, Erysimum, Eschscholtzia, Hollyhock, Lily, Marigold, Rose, and Zinnia.

Yellow—Antirrhinum, Calceolaria, Dahlia, Eschscholtzia, Genista, Hollyhock, Marigold, Rose, St. John's Wort, Water Lily, and Zinnia.

White—Antirrhinum, Aponogeton, Aster, Begonia, Bouvardia, Carnation, Dahlia, Eucharis, Fancy Pelargonium, Foxglove, Gardenia, Gladiolus, Heath, Hollyhock, Iberis, Jasmine, Lily, Myrtle, Phlox, Spiræa, Stephanotis, Sweet and Everlasting Peas, and Water Lily. —W. T. T.

FORCING ROSES AT ST. PETERSBURGH.

According to M. Wolkenstein, Roses are forced at St. Petersburgh with great success, although in December the sun only rises at 9 a.m. and sets at half-past 3. Preparations are commenced in September by placing the strongest specimens under glass to ripen the wood. After two or three weeks they are repotted with as large a ball as possible, and after having been thoroughly watered they are placed in a frame with the lights off so as to be thoroughly exposed. Subsequently they are taken into the forcing-house after having been pruned and cleansed to rid them of insects. The plants are kept as close to the glass as possible, and a damp atmosphere maintained, although the plants themselves are never syringed. For the first few weeks a moderately high temperature is maintained, which is afterwards raised to 50°, and even to 60°, when the buds are well formed. As a rule, ten weeks are required, and the house must be well fumigated. Lateral buds are removed. Treated thus, Roses are often ready soon after Christmas.

Flowers for Spring Bouquets.—Will you kindly favour me with a list of annuals suitable for sowing in my garden in autumn for spring blooming, that will be serviceable for cut flowers for bouquets?—Subscriber. [I am afraid 'Subscriber' must select materials for his spring bouquets from other classes than the hardy annuals, which, so far as my experience goes, yield but few suitable subjects of a very early character. He may try the Nemophilas, Collinsias, especially C. insignis, of which C. bicolor and C. violacea are the best for the purpose, Lupinus nanus, Leptosiphons (all the species and varieties), Limnanthes Douglasi and its varieties, Centranthus macrosiphon nanus, Centaurea depressa and C. pseudo-depressa, Coreopsis Drummondi, C. tinctoria, Vilmorin's new dwarf hybrid Candytuft, Silene pendula rubertima, and S. pendula compacta, though the last, desirable as it is, is almost too dense in habit for cutting. If to these be added Myosotis dissitiflora and M. sylvatica, which may both be treated as winter annuals, a fair selection may be made, but whether they will bloom sufficiently early for the purpose, depends much on the meaning which is attached to the word spring, for but few of the preceding will bloom reliably before May.—W. T.]

Coprosma Baureana in Vases.—This makes a good vase plant, especially when in proximity to dark evergreen shrubs, with which its clean silvery foliage makes a striking contrast. The variegation is well marked and very handsome.—V.

Salvia patens Wintered Out-of-doors.—It is customary in most places to lift the roots of this plant and store them away during winter where they will be free from frost. This is, however, unnecessary—at least in some localities—for we lately saw in Mr. Ware's Nursery at Tottenham, several fine plants of it growing in perfection, which have never been moved from the open ground during the last three years.—S.

VALUE OF PEAT.

The time of year has again come round when owners of gardens are devising alterations and ordering Dutch bulbs, &c., for the display of another season. Perhaps new beds for hardy plants and bulbs are being laid out; or the old ones having become exhausted (although if a proper system of top-dressing has been carried out, this will not be the case even in a long period of years), it is proposed to renew them. At such a time it is well to be aware of the great value of peat both as a manure and as a soil. This material has been already mentioned favourably not very long ago in a letter in The Garden, but as I do not happen to have the number in which it appeared beside me, I must crave forgiveness if the writer of that letter here finds some of his experience apparently pirated. I have very often read and been told by gardeners that pure peat is useless, and that peat-mould or heath-mould is the only kind of peat which can be used. This latter is a very fine black peat mixed with sharp white sand, and is no doubt admirably adapted for growing American and Cape plants, but it is deficient in the very qualities which recommend solid Scotch peat for general purposes. Pure brown peat, such as is burnt on many a hearth in the north, where the fire is sometimes not extinguished during a whole generation, but morning by morning is found glowing under the fleecy ashes, and, replenished by fresh supplies of peat, is again fit to heat the girdle and boil the kettle, sending up fresh coats of richest vandyke brown over the rough stones of the "lum,' *anglicè*, chimney, is a very different substance from the thin black layers of the Surrey and Hampshire hills. It is far richer in all the elements of vegetable life, and by proper treatment all these valuable qualities may be brought out and made serviceable. Indeed, it is worth consideration whether peat in the form of coarse powder would not be worth applying largely to exhausted or clay soil. The attempts to form a compressed fuel from it have hitherto failed as a speculation; it remains to be seen if any enterprising wight will think of forming out of this now useless substance a patent manure of really valuable quality. Peat that it is intended to use in the garden should not be cast in bricks as if for fuel. It should be carted in the form of what is called technically by the Scotch "stoor," or coarse dust mixed with variously sized fragments. There is always plenty of this lying on the ground whence peat fuel has been removed; indeed, the "stoor" at the bottom of an old peat-stack is as good as any that can be got. It is not in this state fit for sustaining vegetable life; it is too strong, and to place young plants in pure peat would succeed as well as to feed young children entirely on beefsteaks and oysters. But mixed with half its bulk of sea or river sand (I prefer the former as retaining moisture longest) and some loam, if desired, added to it (though the last is not necessary), it forms a soil in which all American and most herbaceous and bedding-out plants delight. It is light and yet extremely rich, and, if sea-sand be used, will remain moist under the surface for a very long time. Other advantages which it possesses are, that it is very clean, and does not turn into mud, and that, as a rule, it is very free from insects or worms. Neither sea-sand nor peat in a pure state harbour wire-worm or other pests, and so there is no fear of introducing them, which is the danger of old loam. I have found that delicate herbaceous plants, such as some of the rarer Columbines, &c., make much stronger growth in the peat border than in the ordinary garden soil; bulbs also increase much faster and thrive better; all the Lilies seem to prefer it, and autumn-sown annuals make a wonderful growth in it. This, however, is a moist climate, and perhaps in dry climates peat and sand alone, especially river-sand, would get too dry, in which case clay or loam may be added. Enough has been said, it is hoped, to draw the attention of those in whose neighbourhood peat exists to the very valuable undeveloped supply of the very best material for renewing or manuring exhausted flower and kitchen gardens.

Salmonicepts.

Striped single Petunias and the Drought.—No kinds of tender bedding plants withstand the drought so well as single Petunias, as they neither flag nor cease to flower. They should be grown by themselves in large beds, in which they will be found to soon produce a perfect mass of flowers, beautifully varied in colour and in markings, no two being exactly alike. Cuttings of them put in in the autumn, or seeds of a good strain sown in a gentle heat in the spring, will produce strong plants to bed out.—D.

NOTES OF THE WEEK.

Eucryphia pinnatifolia.—This remarkable new flowering tree has recently blossomed in Messrs. Veitch's Nurseries, at Combe Wood. It is a Chilian tree, with leaves like those of a Service-tree, and large creamy-white flowers, each with a great number of very fine gold-tipped filaments in the centre. The very hot weather has hastened the decay of these; but it is clearly a most important gain for our gardens.

Green Grass in Hyde Park.—The Grass among the flower-beds in Hyde Park is being watered as in Paris, and with the same result—a green sward in hot weather. Watering about London in warm weather is quite as necessary to secure a fresh turf as about Paris.

Ulmus Roezli.—The leaves of this beautiful Elm are delicately suffused with golden yellow, which nearly extends to the tender, green fringe which edges the leaf. It may now be seen in perfection at Messrs. Lee's Nursery, at Hounslow. This might well be called the Golden Fern-leaved Elm.

Helianthus cucumerifolius.—This new Texan Sunflower, to which we directed attention (see Vol. VIII., p. 242) is now in flower at Chiswick. It is an annual which grows about 3 ft. in height, and flowers profusely at the points of the shoots. The flowers are of a deep golden yellow, and have a striking black disc in the centre. It will be useful in large borders, and for planting on the margins of shrubberies.

Cornus mascula elegantissima.—This is a remarkably beautiful form of a well-known shrub, the mature leaves of which, as we write, are broadly and irregularly margined with rosy crimson. In the earlier growths this margin is yellow, so that the plant presents two distinct aspects in its variegation. This fine shrub isnow growing in Messrs. Lee's Nursery, at Hounslow.

Large Evergreen Magnolia and Camellia.—The Marquis della Valle de Casanova sends us photographs of noble specimens of Magnolia grandiflora growing in a garden on the Lago Maggiore. It is 48 ft. high, 114 ft. in circumference, the trunk being 3 ft. in diameter; this gives us an idea of what a noble tree the Magnolia makes in a temperate region. He also sends a photograph of a plant, or rather a tree, of the Camellia rubra maxima. On this specimen, in the month of April, 1871, Mr. J. Linden, Mons. E. André, and the marquis counted between them 6000 and 7000 expanded blossoms.

Eucalyptus montana in Devon.—Mr. Luscombe, of Combe Royal, Kingsbridge, Devon, writes to us as follows respecting this plant:—It blooms, he says, annually in the grounds at Combe Royal. The tree, purchased many years ago, under the name of E. montana, is a very vigorous specimen, nearly 60 ft. high, with a stem 6 ft. 3 in. in circumference 2 ft. from the ground. It seems to be growing throughout the year, and has only once been slightly injured by an unusually severe frost in the spring, when the more immature shoots were a little damaged. It has grown almost too large for the situation which it occupies, as several really large limbs have been taken off which were injuriously overhanging a vigorous Chamærops excelsa many feet in height, as well as other good shrubs. It is graceful in its growth and flowers freely. Unfortunately it cannot be propagated, as the seeds which are produced abundantly are not sufficiently matured to germinate, and cuttings and layers refuse to grow.

Potato Disease.—Mr. Tillery, of Welbock, writes:—"The other day one of my labourers brought me some Potatoes specked with the Potato fungus in the inside of the tubers. They were all from one plant, and he said that he could not perceive any signs of the brown blotches on the haulm. The present hot, dry weather is against the development of the fungus on the haulm or foliage, and if it is first seen in the inside of the tubers it is a new phase in the history of the disease. There may, however, be some specks of the fungus on the haulm near the ground, not easily detected, and this might infest the tubers. The early Potato crops in this district are, owing to the dry weather, very deficient in quantity and size, and the prices in the markets are rising higher. I am afraid the late crops will likewise suffer from the dry weather, and there will be great danger of them taking a second growth should September be very wet. August 14 and 15 have been two of the hottest days registered this summer, 85° and 86° in the shade being reached on each day respectively."

Aphelexis macrantha.—We should be greatly obliged to any reader who would send us a few seeds of this plant, which we desire to send to a correspondent in Italy, where the introduction of plants is forbidden, owing to fear of the Phylloxera.

Lilium Wallichianum.—This is now in blossom at Colchester. It is a grand Lily of the longiflorum section, creamy-white in colour, and about 9 in. long. It is a very suitable kind for greenhouse culture.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Still the hot weather, and as yet our hardy friends remain with us. One of the most splendid of the week is the Double Day Lily (Hemerocallis disticha, fl.-pl.) Our blue Salvia patens also comes in to cheer us. The double Pyrethrums, which came in earlier this summer, are now blooming splendidly at Ware's Nursery. A green Dahlia in the same garden will hardly satisfy florists, although it is very curious. Frequently subjects that we associate with early summer flower a second time in autumn; the present year is hardly a favourable one for such second crops, but amongst them we notice Armeria alpina grandiflora. The Scarlet Lychnis is still bright and beautiful. Japan Anemones have also come in, the white one being the finest. Dahlia coccinea is also amongst the scarlet flowers of the period. Mimulus alatus is a delicately-coloured Californian species, but not worthy of cultivation. Pentstemons are very fine as we write. Amongst British flowers the most beautiful is the Gentiana Pneumonanthe. Oxalis floribunda rosea is very attractive, so is Lilium superbum.

Dwarf Balsams Out-of-doors.—At Bedfont, where Balsams are grown out-of-doors for seed, I noticed the other day a very dwarf and compact strain, which looked as if it might prove useful for culture in small pots and for market work. As grown in the open ground these Balsams attain a height of about 9 in., and measure about the same in diameter; they were covered with bloom and foliage, and promised to make pretty edging plants for taller-growing kinds. These handsome plants can be produced in 48-sized pots, and larger from 32's, but the former is the usual market size, as they occupy little space. There are four distinct colours or markings in the flowers, scarlet self, purple self, white-flaked scarlet, and white-flaked purple; beyond these hues they have not yet broken. The taller-growing, large-flowered kinds bloom most profusely in the open ground, in which they are very beautiful. The colours range through pure white, creamy-white, rosy-white, pink, carmine, scarlet, peach, mauve, purple, crimson, and several blotched and flaked forms, forming about twenty varieties. The culture is of the simplest kind; the young plants are dibbled out into well-prepared ground at the end of May, in rows 15 in. apart.—S.

Roses.—These will require plenty of water, and where well mulched, the second display of flower will be well advanced by this time, and in some places a good supply of blooms for cutting will be kept up till frost clears all off. Early-started buds should be secured, so as to keep them from getting damaged by high winds and rains. Keep down mildew by means of sulphur, as mildew retards growth very much, and young fresh buds suffer greatly from it. If sulphur be used, it will be required to be syringed off as soon as the mildew is stopped. Old favourite kinds of Roses, such as Gloire de Dijon, Prince Camille de Rohan, Anna de Diesbach, Captain Christy, Celine Forestier, and Charles Lefebvre have flowered well this dry season. The last is one of the most useful Roses grown for cutting. Those who grow quantities of pot Roses will have found them very useful this summer for cutting purposes, especially the Tea Roses, which are scarcely ever out of bloom. Tea Rose Duchess of Edinburgh is a valuable addition to our collections; it is a free grower, and a wonderfully free-flowering variety. In habit it is similar to Souvenir d'un Ami, growing and flowering quite as freely, and its dark colour will make it much more valuable than that kind for winter forcing. I have forced it, and have found it to be most useful for that purpose.—H. G.

Salpiglossis grandiflora.—A large bed of this fine hardy annual is just now in flower at Chiswick, where for a time it will be a striking object. Sown in the place where it is growing the foliage entirely covers the bed, and the flowers, which vary greatly in colour, some being beautifully pencilled, are borne well above it. This is emphatically an annual worthy of attention.—A.

Pelargonium-flowered Erodium (E. pelargoniflorum).—This beautiful species has been in fine bloom with me in the open border for the last three weeks. I kept it in the greenhouse during the winter, and planted it out early in May. It has somewhat the habit of the old E. hyemodes, but is much neater in growth. Its large white flowers, with a great purple-feathered blotch on the two upper petals, are a beautiful sight when fully expanded on a cool morning after a shower.—H. Harpur Crewe, *Drayton-Beauchamp Rectory, Tring.*

A Good Contrast.—Large plants of Echeveria metallica and Centaurea Clementi contrast well with one another, either in the shape of alternate plants or rows, the deep bronze and stiff formal habit of the Echeveria being greatly heightened and set off to advantage by being in close proximity to the fine graceful foliage of the charming silvery Centaurea.—James Groom, *Henham.*

Orange Asclepias (A. tuberosa).

European Cyclamen (C, europæum).

Persicaria (Polygonum orientale).

Tiger Lily (Lilium tigrinum).

Oxalis corniculata var.

Cardinal-flower Lobelia (L. cardinalis).

Madia elegans.

Valeriana macrosiphon.

Giant Knot-weed (Polygonum cuspidatum).

Salpiglossis sinuata.

Crimson Mallow (Callirhoe involucrata).

Bee Balm (Monarda didyma).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

THE FLOWER GARDEN.

NEW VARIETIES OF ESCHSCHOLTZIA.

Of these handsome hardy annuals, California has given us three species, viz., E. californica, yellow; E. crocea, saffron; and E. compacta, a dwarf-growing form, with yellow and orange flowers, now but little grown. From Mexico came E. fumariæfolia, which is now but seldom met with; and elsewhere we obtained the delicately-formed E. tenuifolia, a kind also with yellow flowers, and specially adapted by its character and habit of growth for rockeries and edgings. Really the Eschscholtzias are hardy perennials, but they are invariably found classed with hardy annuals; and by some they are treated as biennials. It was hardly to be expected that such singularly effective flowers could find a place in English gardens without efforts being put forth to improve them, or at least to obtain new types, of which E. crocea has been somewhat prolific, and these have been mainly obtained by selection. One selection has received the name of aurantiaca, because of the fine glow of deep golden orange contained on the flowers; the colour is rich, and it is a most striking form. E. alba, as its name implies, has white flowers, and is a selection from E. crocea; the flowers are perhaps smaller in size than those of the parent, but it is a good, useful, white-flowering hardy plant. A selection was once made under the name of alba grandiflora, really a large-flowering, white kind, but I fear it never became fixed; had it been so, it would have proved a great acquisition. Another selection, having a dwarf, close, symmetrical growth, was named compacta, but it also has never, to my knowledge, been distributed. E. rosea is a Continental novelty, introduced a few years ago, but a disappointing one. It is simply E. alba with a rose-coloured tint on the outside of the petals, and when fully expanded the flowers present a white rather than a rosy appearance, as might have been expected. E. crocea has also yielded a striped form, or rather it came on aurantiaca, for the orange ground has small lemon stripes, and when well displayed it is very pretty. There is, however, always a tendency to revert to the orange-coloured self form. Once there did appear a chance of having a double form of crocea, but that, I fear, has vanished a few years ago. E. crocea gave forth some flowers having notched petals, and orange and sulphur forms were selected, under the names of dentata aurantiaca and dentata sulphurea, and distributed as novelties. They are, however, not much grown, for, notwithstanding that variety has charms, the flowers have a ragged appearance, which is not inviting. So much, then, for descriptions of the various forms of Eschscholtzias which have been produced from time to time. All these selections from E. crocea were made, with the exception of E. rosea, at Dedham and St. Osyth; and if any one be desirous of studying annuals, they cannot do better than pay a visit to Messrs. Carter's seed farms there in July and August, when the annuals and other flowers are in full bloom. Especially interesting is it to get some insight into the various selections being made from time to time with a view to the introduction of new forms. As soon as the slightest departure from the normal character is noticed it is at once marked, and the seed is carefully saved and grown by itself another year. Sometimes the sport will go back the first year and be lost; in other cases it will remain true for a few years and then become extinct. Any sport requires from ten to fifteen years' persistent selection to fix it, and not always then permanently.

To have these showy flowers in all their fulness of beauty, they should be treated as biennials, and sown in August and September to bloom in early summer. They are very hardy, and snails and slugs do not molest them. The plants get deeply and firmly rooted, and hold on much longer than those sown in spring. I have seen in May grand patches of Eschscholtzias literally covered with large, bold, and striking blossoms. The fact is, that one-half, if not more, of our hardy annuals, when sown in spring, scarcely get well hold of the soil before the dry weather sets in, and then they come into bloom, and are roasted up in a short time. With autumn-sown annuals, on the contrary, and especially with Eschscholtzias, it is very different; they hold on well, and if the decaying flowers be pinched off, and the plants not allowed to perfect their seed-pods, they break into fresh growths, and bloom continuously. Some recommend sowing as late as December, allowing the plants to flower where they are sown, and not attempting to transplant them. For autumn sowing the varieties most to be preferred are—E. crocea, E. crocea aurantiaca, and E. crocea alba. R. D.

Funkias in the Wild Garden.—We have often spoken of the conditions in the wild garden being more suitable to many plants than those which obtain in what might seem choice positions in borders, &c., many of the plants attaining greater beauty and remaining longer in bloom in the shade and shelter of shrubby places than when fully exposed. As an instance of this, we may mention that we saw Funkia cœrulea the other day, showing a size and beauty in a shady, woody place at Beauport, near Battle, which we have never seen it attain under other circumstances. The plant was over a yard high, and bore many stately stems hung with blue flowers. The Funkias, by the way, are exceedingly valuable plants for the wild garden, not being liable to accidents which are fatal to Lilies and other plants exposed to the attacks of slugs and rabbits.—V.

Double-spathed Arum Lilies.—In Vol. X., p. 55 of The Garden, a double-spathed Arum Lily is figured. Last May I grew one that, judging from the representation in question, was more perfect. It was the seventh flower that opened on the same plant during the winter and spring. I sent it to the "American Agriculturist," and it was noticed in the July number of that paper (see p. 245). I dry my Callas off in June, placing the pots on their sides under the potting bench or wherever it is dry, and leave them there till the end of September or beginning of October, when I give them a good soaking of water, turn them out of their pots, remove the old soil, and break off all small bulblets. Then I pot the large bulbs in a compost, consisting of two-thirds loam, the other third equal parts of leaf-mould, and well-decomposed stable manure, with a good sprinkling of sand. Last autumn I put four bulbs in a 12-in. pot, and during the winter I had eighteen blooms from the one pot, some of them measuring 8 in. across. This specimen I grew in an early Vinery that was started in December, and when it commenced blooming I gave it liquid manure twice a week. If blooms of this Lily be wanted in summer, the plants must be dried off in winter; but with us the blooms are more valuable in winter. I used at one time to keep Callas continually growing, a system under which one was never sure of their blooming, but since I commenced to dry them off and re-pot them I have never failed to secure good blooms.—W. Barkham, *Hohokus, New Jersey, U.S.*

Tropæolum Bothwell Castle, and Dumfries House Seedling.—Bothwell Castle Tropæolum is a grand plant for covering bare walls and fences with a sheet of bright scarlet in summer. It has been, according to "The Gardener," in great beauty used in this way at Bothwell Castle, and also trained on stakes in the form of pyramids. Dumfries House Tropæolum, raised by Mr. Pettigrew, now of Cardiff Castle, is however very much superior in all respects to Bothwell Carsle, and that is saying very much for it; it is particularly valuable for draping walls and fences. So superior is it to any other similar Tropæolum that we have ever tried, that it is the only one we grow now, and we can very strongly recommend it for walls, pyramids, and rockeries.

Hardy Crinums—C. ornatum.—Quite a feature just now in the border outside the curvilinear range at Glasnevin is Crinum ornatum. Fancy a Crinum with a stem nearly as thick as that of the giant C. amabile of our stoves, with flaccid, spreading leaves, each some 5 ft. or more in length, and where widest 6 in. broad, with a flower-stem 4 ft. high, and thick and stout as a walking-stick, and crowned with an umbel of a score of pendulous, white, rose-tinted flowers, each nearly as large as that of the Belladonna Lily, and the reader will have a good idea of this grand, hardy Amaryllid. Yes, perfectly hardy; for some six years or so have it and its companion plant, C. Moorei, stood out without the slightest protection, and among these years were some of a character to make the test of hardihood one of the most crucial kind. These two magnificent Crinums are gains indeed to our gardens, and for their introduction and the interesting fact of showing their hardihood, the lovers of choice hardy plants have reason to feel indebted to Dr. Moore and Glasnevin. There are, too, according to the "Irish Farmers' Gazette," several other new and interesting plants in flower there just now, but which our space will not admit of noticing this week, among others the stately Natal Hyacinth (Hyacinthus candicans).

Caraway-leaved Erodium (E. caruifolium).—This, which in leaf much resembles E. romanum, and in flower E. macrodenum, is now finely in bloom. It is the neatest of all the Erodiums in growth, and makes a beautifully fresh green compact tuft, studded with numerous spikes of rosy-lilac and purple flowers.—H. Harpur Crewe, *Drayton-Beauchamp Rectory, Tring.*

A MODE OF PLANT PACKING.

The methods of packing plants, shown in figs. 1 and 2, are much used on the Continent, their great merit lying in the quickness with which the operation is performed, which is often a matter of great importance to the packer. It is used especially in the case of small plants which have not far to go. As shown in fig. 1, the plants are simply laid horizontally in a basket of the form indicated, pots and all, without any of the trouble of putting Moss around the roots. A first layer of plants being placed in the basket, the heads are covered with dry Moss or chopped straw, and others are laid on the top until the basket is full. The whole is then covered with straw, which is cut at each end of the basket so as to allow it to close. The straw should be pressed down with a certain amount of firmness, so that the plants may not shake about during their journey. Baskets of this shape may be used for longer journeys, in which case the roots of the plants ought to be surrounded with Moss, which must be rather dry than damp. If the plants are particularly delicate, their heads should be wrapped up in paper so as to prevent fermentation and consequent decay. If the plants be of large size, the method of packing shown in fig. 2 is to be preferred, more especially if they be tender, or if the contemplated journey be a long one. In this case the plants are placed vertically instead of horizontally, that is to say, in their natural position, besides which the air has freer access to them. If

Fig. 1.

Fig. 2.

in pots, or with a ball of earth attached, they ought to be packed as closely as possible, so as to avoid shaking. Sometimes the sizes of the heads prevents this, in which case the spaces intervening between the pots or balls of earth should be filled up with Moss, chopped straw or hay. The latter material is objectionable, owing to its being liable to ferment. A cord is then passed round the plants at the base of the stem, and properly secured, so as to hold all firm. Delicate plants and those which are in bloom should be packed with great caution, and wrapped in pieces of paper. All the plants having been placed in the basket, they should be tied up carefully with bast, or some supple tying material. Sticks of the proper height should then be stuck firmly in the sides of the basket and brought to a point at the top and tied, the tops being cut off even. The sticks should be kept apart here and there by hoops fixed inside. The whole is then surrounded by straw or matting, and properly secured by means of strong twine. F. Jamin.

Bourg-la-Reine.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Hyacinthus candicans.—This is blooming well in the open border with me, and is producing a flower-stem 3 ft. 4 in. in height, crowned with a couple of dozen of large and handsome, pure white, pendulous blossoms; those that first opened are now setting freely for seed, so that this handsome Port Natal border plant will, I hope, soon become plentiful.—W. E. Gumbleton, *Belgrove, Queenstown.*

—— This seems perfectly hardy here. It has been out in the ground all the winter, and it is now showing a fine spike of bloom.—T. M. Bulkeley-Owen, *Tedsmore Hall, West Felton, Shropshire.*

The Prairie Rose.—You ask what the Prairie Rose is. Its proper name is "Prairie Queen." It is a hardy, climbing Rose which flowers in clusters, the blossoms of which they consist being a deep pink colour and double. With me, on poor soil, they measure about 2½ in. across: last season it made a growth of 20 ft. and 1 in. thick at the ground. I have never tried it as a stock for grafting or budding, but I think it would be suitable for such purposes, as it is a good grower and very free bloomer.—W. Barnham, *Hohokus, New Jersey, U.S.*

TODEA SUPERBA AS A ROOM FERN.

There is an impression that it is difficult, if not impossible, to grow this lovely Fern in the sitting-room. It may interest some of your readers to know how it may, by very simple means, be reared to the greatest beauty with much less trouble or difficulty than any of the Adiantum type. Four years ago our plant was a tiny seedling with a couple of fronds barely an inch long, and we were warned by every one that it would be dead in a month. The first object was to secure for it—so far as could be done in a sitting-room constantly occupied, and the greater part of the year with both gaslight and fire-heat—its natural conditions—a damp atmosphere, very moderate light, and complete exclusion from direct sun. With this view the thumb-pot containing it was sunk to rather over its brim in a shallow seed-pan filled with live Hypnum Moss, and a bell-glass placed over the whole. A 3-in. one was at first sufficient. We chose Hypnum in preference to either Sphagnum or any of the dwarf Selaginellas in the hope that it would keep always fresh and green under these conditions, a hope which has been amply fulfilled. At varying times, from once in ten days to once a month, according to the weather, Todea and Moss alike were dewed well over with tepid water through a fine rose, the glass being at once replaced. This treatment has been ever since continued, the containing vessel and the bell-glasses being enlarged as required. It now more than fills a 24-in. glass, the largest I have been able to procure. There are upwards of fifty fronds, from 8 in. to 15 in. long, and 6 in. to 9 in. broad, and were a larger glass procurable or greater size manageable, it could be easily grown to rival the largest exhibition specimen. The persistence of the fronds is extraordinary. Only three have ever been cut away, and these were so, because they had been partially scorched by the sun having accidentally struck on them where they touched the glass. Its position has always been on the floor at a north bow-window, under a large Wardian case, which to a great extent shades it. Under these circumstances a certain degree of blanching might have been expected; on the contrary, the depth of the green far surpasses all I have seen in any specimen grown in the ordinary way; the fronds are always gemmed over with myriads of tiny diamonds, and their delicate transparency is such that on holding a sheet of white paper behind one of them its whole interior structure comes into view. Direct sunlight is never allowed to strike on it. It has only once been re-potted—a few months after we got it, and then only into a 3-in. pot, in which it still remains. On that occasion we found that nearly all the curious filmy roots had left the pot, striking over its surface and rambling all through the Hypnum. It has never since shown the least sign of being straitened for pot-room, or of failing to find in the Moss all the sustenance it needs. The Moss, again, was supplied with no soil whatever, and has all along maintained the most vigorous health and a delicacy of beauty almost rivalling that of the Todea, apparently from the slow decay of the lower portions of it. For two or three years it has been seeding freely; and it is not easy to give an idea to those who have not seen it in this state, how the small, jet-black, gleaming sporangia add to the beauty of the fronds. Unlike any genera I can at present recall, these fertile fronds remain persistent, and do not decay. Last year one or two seedlings were discovered struggling up through the Moss, one of which was safely potted off, and is now being brought up, with every prospect of success, exactly like its parent. This year there is the appearance of a large crop of this, though of course it is doubtful whether they will not be overpowered in their first conferva-looking stage by the Hypnum. The plant was one of a large batch of seedlings raised by Mr. Patterson, Millbank, near Edinburgh. Whether it has to some extent "sported," or whether one or two peculiarities are due to the way in which it has been grown, I cannot say. These peculiarities are, that the stipe is longer than in the normal form; the fronds are more triangular in form; and they are also more "furzy," so to speak. I incline, however, to think there has been a slight degree of sporting, as our seedling, so far as we can yet judge, though under the very same treatment, approaches much more closely the normal type. Any of your Fern-loving readers who may be induced to try the experiment will, I am satisfied, find this exquisite species, once started, give less trouble to grow to full beauty in fire-heated, gas-lighted rooms than attends our own Lady Fern, by following out this mode of culture, or such modification of it as may occur to them. The essential points are—a constantly damp atmosphere around the plant; a considerable degree of shade and careful exclusion of direct sunrays from it; and any free loose medium, such as Hypnum or other dwarf Moss, through which the roots may ramble.—"The Gardener."

Hanging Baskets.—We use quantities of these for conservatory decoration. Our summer baskets contain seedling Petunias, Tropæolums of different sorts, and Ivy-leaf Pelargoniums, and for late autumn and winter we have large baskets of Selaginella umbrosa; but the prettiest one we have ever yet had consists of a mixture of Blue King Lobelia and Fuchsia gracilis variegata, with a good dark Fuchsia for a centre plant.—H. J. C.

GARDEN CEMETERIES.

We have several times alluded to the beauty, extent, and careful planting of the cemeteries formed within the past generation or so near all the great American cities, and now publish two engravings which imperfectly represent the beauty of one or two scenes in the cemeteries at Spring Grove, near Cincinnati. These are engraved from photographs sent to us by Mr. F. L. Olmsted. These noble garden cemeteries are of great interest from many points of view, and the following extracts from the published report of Spring Grove Cemetery throws some light on the plans and principles of the management there, which, as it is said, produced even better results than are seen elsewhere in America.

Cemeteries in America, as well as in Europe, are conducted on various plans. A number of these are under the control of the city authorities, and, of course, are seldom self-supporting. Others, again, are the property of religious communities, which sometimes manage to pay expences, and have at times something left for the benefit of the church; but there is very little security to the owners of lots, for the city council or the trustees of the church may at any time pass an ordinance for the removal of the dead to other quarters, particularly if the burial ground be situated in or near a city, and has become valuable for other purposes. In that case the last resting-place of the dead is easily condemned as a nuisance, and the consecrated ground is sold for building purposes, merely for the sake of gain. Again, others are owned by one or more individuals, as is the case in Philadelphia, Chicago, and other places, and this plan has thus far given general satisfaction to the public. The largest and most popular institutions of this kind, however, are those where every lot-holder is a member of the corporation, and the entire income is devoted to the improvement and perpetual care of the ground. Mt. Auburn, near Boston, Greenwood, near New York, and Spring Grove, are conducted on this principle, and have so far proved successful. They have, by proper management, already accumulated a considerable surplus, and there is not the least doubt that, in a few years, they will have a fund, the interest of which will be more than sufficient to keep the grounds perpetually in complete order, after all burial lots shall have been sold, and the disposition of the finances of such corporations for this special object should be steadily kept in view. Those engaged in laying out a rural cemetery should be particular in the selection of a suitable spot, sufficiently remote from the habitations of the living, yet of easy access. The surface of the ground should be undulating rather than flat, in order to admit of proper drainage, while a sandy subsoil is desirable on many accounts. In taking possession of the land the first step should be to have a correct survey made, and a general plan of improvement agreed upon, the execution of which should be in the hands of a man who understands his business thoroughly. It is the constant doing and undoing which has caused not only great waste of money, but also what is more valuable, loss of time, in many cemeteries. Plans designed by inexperienced persons may look exceedingly well on paper, but when they are executed they generally produce an effect that is pitiable, unsuitable, and unsatisfactory. Large undertakings of this kind should consequently be begun, directed, and finished by one experienced person. If the grounds selected for a cemetery be wooded with native forest trees, the greatest care should be taken for their preservation, at least on those parts that cannot conveniently be used for burial purposes, such as marshes, deep ravines, and steep declivities.

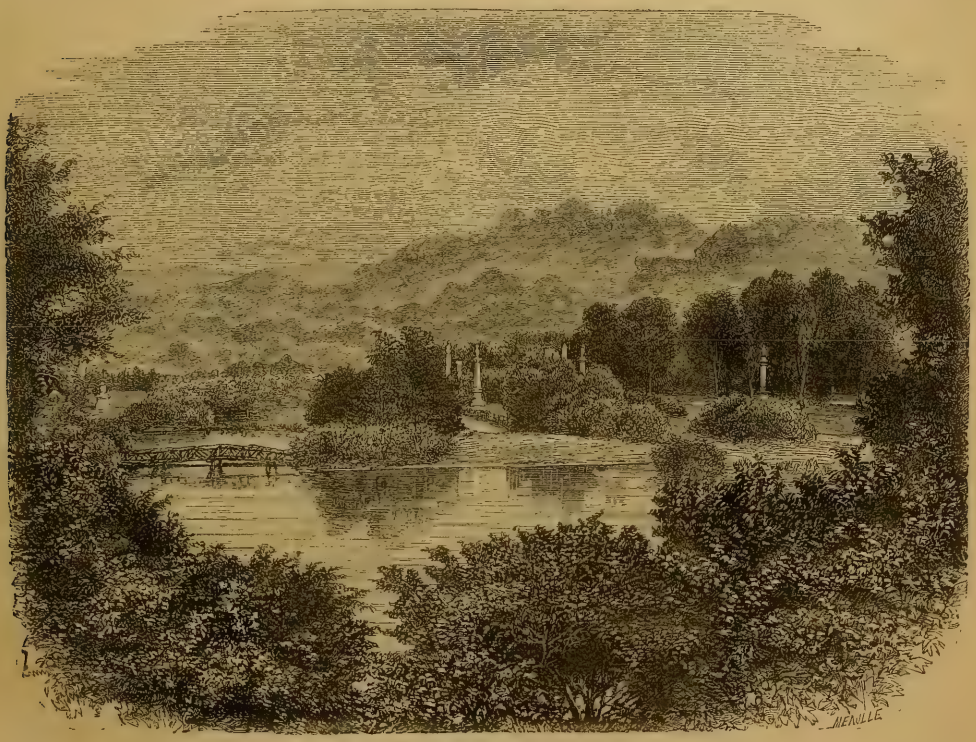
View in Spring Grove Cemetery.

Another very important, and perhaps the most important, point in the laying-out of cemeteries, is the proper location and construction of avenues. It must be remembered that at times very heavy loads of stone and other materials will enter the grounds, and large numbers of carriages congregate together, not only when funerals take place, but on other occasions. If, therefore, avenues be made of ample width, and constructed in the best possible manner, carriages will invariably encroach on the Grass borders, and heavy loads will sink into the ground. It is not necessary to make as many avenues as are found in most cemeteries, for some will seldom be used, particularly if they have a steep grade, and are laid out in the so-called serpentine style, generally very popular with committees, but very expensive in making, on account of the waste of valuable ground, and still more so in keeping them in order afterwards. Avenues should have an easy grade, graceful curves, and be so located as to give to each section a natural outline. In regard to the necessity of every burial lot fronting on an avenue, seclusion is more in unison with the feelings of many friends of the dead than publicity, glare, and notoriety. In forming new combinations, perspectives, and groupings, we should be very cautious in the selection of suitable places for monumental structures, as well as in the planting of additional trees and shrubs. Choice shrubberies and flower borders particularly demand limitation, no matter how fashionably patronised, for, if immoderately extended, as they very often are, they only mark the triumph of luxury over elegance, and afford a poor compensation for the natural advantage of beautiful green Grass plots, that can be kept in order with very little expense. In relation to the improvement of individual burial lots in Spring Grove, considerable good taste has been displayed by lot-holders. A large number of them have adopted a method, which for simplicity, appropriateness, and durability, deserves the attention of all who wish to make permanent improvements that will take care of themselves, and cost but a trifle when compared with the old method of decorating lots. The portions of the grounds improved on the new plan, already form a striking contrast to some of the older parts, where head and foot stones, hedges, fences, and toys of all descriptions, are huddled together in such profusion as to prevent the workmen of the corporation from keeping those places in the same good order as the first named, notwithstanding all the outlay and exertion on the part of the agents of the corporation to satisfy every reasonable demand of lot-holders. Enclosures around burial lots, in a well-governed cemetery, detract from the sacredness of the scene, by supposing it possible that such a place would be visited by persons incapable of conducting themselves properly, or that the grounds were pastured by cattle. They also cause considerable inconvenience when interments are made, as well as in the erection of monuments, and cost the corporation more labour than most persons are aware of. There are some parts of this cemetery where lot-holders have invested money in stone work, as if the embellishments of a burial place depended upon their outlays, and have produced effects, which people of cultivation regret, though they cannot amend. Such improvements, however inappropriate, are, nevertheless, evidences of the existence of those means, which, if properly applied, would produce monuments worthy of admiration, instead of gewgaws manifesting pretension only.

In order to prevent our rural cemeteries from assuming, in the course of time, a crowded appearance, there should be a standing

rule to prevent the erection of more than one monument to each family burial lot. This should be placed in the centre, and on a solid foundation not less than 6 ft. deep, the usual depth of graves, so that burials can be made around the monument, and the respective inscriptions be placed on it, thus saving the expense of head and foot stones, which always more or less convey the idea of a potter's field, particularly where single interments are located, and where people to all appearances vie with each other in procuring the tallest head-stones and the largest amount of ornament, causing great difficulty in keeping such places in proper order. Wherever grave marks are necessary, they should project but little above the surface of the ground, and be not much larger than ordinary landmarks to lots, but placed deep enough to be below the action of frost. In some instances lot-holders have planted a tree in place of the monument until a suitable one can be procured, or, sometimes, even to remain permanently, which is very desirable on sections where there is already a great abundance of tomb-stones.

The arboriculturist, in particular, will find Spring Grove a place of great interest. It has been the desire of the directorate from the first, to introduce a variety of suitable representatives of the vegetable kingdom into these grounds. In this they were considerably assisted by the lot-holders themselves, the most prominent of them being members of the Cincinnati Horticultural Society, in which Society originated the idea of establishing a rural cemetery in this spot. The greater part of the grounds, when purchased, was, as stated before, densely covered with native forest trees. In the lower or southern portion, the Elm, Sycamore, and Ash, predominate; the central part of the grounds is chiefly covered with Tulip trees, Sugar Maples, Sassafras, &c., while the western division is almost exclusively occupied with Beech, Sour Gum, Red-bud, and Dog-wood. The northern part is adorned with some of the finest groves of various kinds of Oak, of Nature's own planting centuries ago. The effect produced by the brilliant colours which most of these trees and shrubs assume in autumn, is truly magnificent. The introduction of varieties of Evergreens, whose perennial verdure is particularly appropriate for ornamenting places of sepulture, has contributed much to mitigate the bleak desolation of winter. The varieties of situations and soil at Spring Grove, in which it may be desirable to plant the various kinds of trees and shrubs, are very numerous, and no treatise, however elaborate in detail, could bring the whole under review. From the practice of indiscriminate and capricious planting by those who own lots, a large number have had cause to regret some untoward results. Choice specimens of trees are often seen to injure each other by too close planting, and, in many instances, proprietors of lots obstinately refuse to permit the removal of some in order to save others, until it is too late. Rare and beautiful specimens are found hidden and destroyed by others of an inferior description, which should be removed.



View in a Garden Cemetery (Spring Grove).

The largest and best grown specimens of Evergreens on these grounds are the following:—Pinus austriaca, Cembra, excelsa, Laricio, Mughus, Pumilio, ponderosa, rubra, rigida, Strobus, and sylvestris. Abies alba, nigra, rubra, canadensis, excelsa, orientalis, and Douglasi. Picea balsamea, nobilis, Nordmanniana, Pichta, pectinata, and Pinsapo. Juniperus oblonga pendula, suecica, hibernica, virginiana glauca, and Sabina. Thuja occidentalis, orientalis, tartarica, filiformis, aurea. Taxus baccata, canadensis, and others.

In consequence of the fostering protection afforded to birds in and around these grounds, the admiring ornithologist has frequently an opportunity to see those feathered songsters in large flocks, at times actually covering the lawns, particularly in the morning or towards evening, in search of food. We here see the nest of the oriole suspended from a projecting branch. The chattering Cedar

birds and starlings enliven the dense Evergreens, while the thrush, the robin, and the cardinal, pour out their soft and melodious notes. The titmouse and the wren are also quite numerous, and at times the passenger pigeon in seen in extraordinary multitudes, while the cooing note of the dove is heard often. A large number of foreign birds were introduced a few years ago by some of our lot-holders, among them were the skylark and the European blackbird.

The area of Spring Grove is considerably over 300 acres of undulating surface, mostly of sandy subsoil, and abundantly supplied with water and forest scenery. The numerous springs and the ancient groves of trees suggested the name of Spring Grove. The present plan of improvement was adopted by the board of directors in 1855, at the suggestion of Adolph Strauch, the superintendent and landscape gardener since that time. Those parts of Spring Grove planted in the first years of its existence, are now being gradually remodeled in conformity with the simplicity of the present style of improvement, at the request of the lot-holders themselves. Since the adoption of the present style of improvement the financial condition of the association has also very much improved, and a large surplus fund has been laid aside for the perpetual care of the grounds after all burial lots shall have been sold.

MY DIARY FOR SEVEN YEARS.

By J. DENNING.

August 21.—*Sowing*—Frogmore and Walcheren Cauliflower; Lobelia speciosa, sixteen pots put in cutting-pit covered with glass; Silene, Saponaria, Nemophila, and Virginian Stocks; Mignonette in pots, and also for tree Mignonette; Sir Harry Strawberry seed put in cold cutting-frame. *Potting*—Houlletias and Calanthe veratrifolia; potting off winter Heliotrope cuttings; putting pots down by Chrysanthemums ready for layering them; potting off first sown Intermediate Stocks; potting Oncidium macranthum, tigrinum, hastatum, and Odontoglossum hastilabium in Sphagnum Moss. *Cuttings*—Put in of Senecio, Veronica Andersoni variegata, Salvia splendens, Gnaphalium lanatum; Pansies; Hydrangea; Roses in slight heat in frame; got nearly all Pelargonium cuttings in; got all the Verbena, Heliotrope, and Petunia cuttings in; put in Scrophularia, Gazania, Centaurea (better in spring), and Agathæa; also more variegated Pelargonium cuttings. *Putting in*—Some Fuchsia cuttings; also Oxalis, Sage, Balm, Gazania, and Pelargoniums of conservatory sorts, Zonals. *Pricking out*—More Wallflowers for winter flowering. *Miscellaneous*—Netting Plums; also the De Montfort Plum and Apricots; finishing the summer nailing, second time over; pegging down the Petunias again; staking the latest-sown Peas; putting Madame Vaucher and Mrs. Pollock under cover for stands; re-arranging stand plants, picking off expanded blooms except those wanted immediately; shifting Balsams, as far as ready; shifting a few Odontoglossums, which are not healthy, into fresh Sphagnum and peat; shifting first Cinerarias and Calceolarias; washing Cattleyas; washing leaves in late Vineries for spider; watering Scarlet Runners with guano-water; cutting in Calamint and other edgings to flower-beds; gathering Apricots, some Keswick Apples in farm orchard, and a few Jargonelle Pears; taking up Prolific Potatoes, and putting them in cellar; gathering Lobelia seed; also Onions for pickling; drying Penny Royal and Summer Savory; putting manure into heaps preparatory to making a Mushroom bed; digging Potato ground for Coleworts; thinning out Beans in pots; putting frames on Violet beds, and putting in the soil four barrows to a light soil, composed of one barrow-load of new loam, two barrow-loads of old loam, and one barrow-load of leaf-soil; digging land for Turnips; earthing up Celery, not too much, afraid of grub. *Miscellaneous*—Cleaning out Orangery; cleaning all the marble statuary; cleaning glass conservatory; cleaning walks; raking up leaves in wood; hoeing among crops; finished going round all pleasure ground borders; mowing verges; nearly finished Laurel cutting; all Heliotropes in pots ought to be cut back about this time for winter blooming; cleaning, pruning; cutting off breastwood from Apples and Pears; cutting in Alyssums, &c., again; looking over Cattleyas for insects which disfigure leaves; picking off tall blades from Dactylis variegata; and thinning Turnips as far as ready.

Aug. 22.—*Sowing*—Calceolaria seed for spring plants; a good border of Veitch's Turnips, Chervil, and Spinach. *Potting*—the largest seedling Cyclamens into 60-sized pots, and others into thumbs. *Cuttings*—Put in Cuphea, Nierembergia, and Ageratums. *Planting*—Coleworts; Endive in front of Fig-house, and on Strawberry ground. *Miscellaneous*—Putting hexagon netting on Cherry wall to keep off wasps; putting final stakes to tree Mignonette; rearranging stove plants; shifting largest Primulas into 48-sized pots with two-thirds leaf and sand; fumigating Orchids for thrips; watering Celery; gathering all the Jargonelle Pears, Transparent Pippin, and Thorle Pippin Apples; pulling up spring-sown Onions; giving Broccoli another earthing-up; stopped early Vines to try to ripen them; putting on pipe-heat and air; weeding Strawberry plants; pulling up exhausted Peas; hoeing weeds; cleaning flower borders; hoeing land; raking border edges where leaves had collected; clearing out pit ready for Cucumbers.

Aug. 23.—*Sowing*—Fulmers' French Beans in pots, and Bath Cos Lettuce. *Cuttings*—Put in of Tagetes lucida, Pentas, Scutellaria; and finishing putting in Pelargoniums. *Planting*—Put in Nasturtiums, Cedronella, and Thyme. *Miscellaneous*—Netting Marie Louise Pears; shifting Stocks into 8-in. pots; taking up to conservatory some second sown Balsams and Fuchsias, some Isolepis, and a few small Pelargoniums; shifting Poinsettias; washing Orchids; giving Pelargonium cuttings a good watering; weather very dry; watering Peach borders inside, also outside Vine border, and late Peas; gathering a few Peaches, also Pines, Black Grapes and Muscats, Apricots, Violet Plums, Green Gages, Filberts, Figs, Apples, Pears, Gooseberries, Melons; plunging the few remaining plants which were forced; earthing-up three rows of Celery, viz., one white, two red; covering the Spinach-beds with ashes; clearing out Peach and Strawberry houses; preparing pit for Primulas; lowered stage in Epacris pit; setting Strawberry plants in pits thinner, and taking off runners; exposing Peaches out of doors; picking decayed flowers off, and pinching in when required; cutting Laurels with knife; weeding walks.

Aug. 24.—*Potting*—Iresine Herbsti into 6-inch pots for dinner-table; spring-struck Heliotropes into 32-sized pots; and potted off latest Primulas. *Pricking out*—Wallflowers for cuttings. *Cuttings*—Put in a few more Mrs. Pollock Pelargoniums out-of-doors. *Planting*—Lettuce and Endive both under walls and on open borders; a good breadth of July-sown Lettuce; Leeks; finished laying Carnations. *Miscellaneous*—Tying large Cytisus standing out-of-doors; took a part of Dendrobium Devonianum out of East India-house and placed in more sunny aspect; watering Peas, and also Vine border; gathering Peaches in orchard-house; taking up Royal Ashleaf Potatoes; thinning out shoots in Rose pit, pegging remainder down, and giving plants a good top-dressing and watering; budding Roses; pulling up Broad Beans in order to sow Radishes; earthing up latest-planted Cauliflowers and June-sown Cabbage; weeding walks, and otherwise putting the place in good order.

Aug. 25.—*Sowing*—Radishes a good sowing, and in a good aspect; should sow again about first September. *Potting*—Achyranthes Verschaffelti for table decoration in winter; Poinsettias into flowering pots. *Planting*—Endive; laid Chrysanthemums in small pots. *Miscellaneous*—Putting a few spring-struck Cloth of Gold and other Pelargoniums into 48-sized pots; watering out-door Peach trees again, also Cauliflowers and Vegetable Marrow; taking up Lapstone Potatoes; budding Roses; spawning first Mushroom-bed (eighteen days late), and covering with litter—produced abundance of Mushrooms September 21st—great quantity of Mushrooms October 2; giving all Celery a little earth-up, to protect from pheasants trampling about; preparing to sow 200 pots French Beans; dug some Potato land for Stocks; washing woodwork of Cucumber pits; cleaned the seed from the Centranthus.

Aug. 26.—*Potting*—Potted off young Pelargoniums, ligewise some Stocks into 6-in. and 8-in. pots. *Cuttings*—Put in Salvia, Tropæolum, Crystal Palace, and Scented Verbena cuttings; putting in Artemisia cuttings. *Planting*—Out the Cucumbers for winter; also two houses of Cucumber, keeping them at 75° at night; planting latest sowing of Paris Cos Lettuce under Peach wall; laying Anne Boleyn Pinks; put a freshly-imported Cattleya maxima in a basket. *Miscellaneous*—Changed Lycaste shade, wind blew other to pieces; got tree Mignonette into passage of conservatory; washing Lycaste, &c.; getting Cattleya-house shelves washed; washing glass in span Cucumber pit; watering flower garden again; very windy day, caused immense lot of watering; sent in some Mulberries; taking up Milk-white Potatoes; digging ground for autumn Lettuce; digging Strawberry ground for Cabbage; preparing land for Onions; shook out more manure for Mushrooms and turned the other; put spawn to Mushroom bed, soiled and covered it with litter, and shut ventilators and doors; began thinning out Strawberry plants in pots; dusted lime and soot over Celery; stripped early Vinery; took some lights off early Peach-house; emptying rubbish-yard; cleared up Pea rods, old hampers, &c.; got all boxes under cover.

Planting for our Heirs.—When Ulysses, after a ten years' absence, was returning from Troy, on coming home he found his aged father in the field planting trees. He asked him why, being now so advanced in years, he put himself to the fatigue and labour of planting, the fruits of which he was never likely to enjoy? The old man, taking his son for a stranger, replied, "I plant for my son, Ulysses, when he comes home."

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Lawns, in many parts of the country, have required little mowing this season; indeed, even the roots of the Grass, especially in old gardens, are killed in patches, and the effect of the burning weather upon Grass is much aggravated where it has been cut too closely; as I have before remarked, it is a great mistake to set the mowing machine so that it will cut too closely, particularly where the nature of the land is such as to suffer much during dry seasons. Where the Grass is destroyed in this way, if sufficient rain were to fall within the next three weeks to thoroughly moisten the ground, I should recommend such places to be sown with a mixture of good lawn Grass seed, and covered with half-an-inch of finely-sifted loam, to which has been added one-eighth of powdered lime; if the weather be such as to favour the seeds being sown within the time just named they will be early enough to vegetate, and get sufficiently established to stand the winter, by which means the bare, unsightly state of the ground through the winter and spring will be avoided. The necessity for invigorating old lawns every second year or so by applying a slight top-dressing of this kind was never more apparent than at the present season.

Violas, Daisies, Arabis, Alyssums, and similar plants in the reserve garden for filling vacant flower-beds during the winter, will, if the excessively dry weather continue, require watering, or they will be in a poor condition for doing duty in their winter quarters. Small shrubs, that are used for similar purposes, will want attention in this respect. Plants that are so often moved as the above cannot get through a trying season without the use of the watering-pot so well as others that have time to get firmer root-hold.

Melons.—We seldom have seen so good a season for late Melons as this has so far been; where they have received the needful attention as regards watering, thinning the shoots, and regular syringing to keep down red spider, those that were planted in frames after the bedding plants were cleared out, have done well. As soon as there is any appearance of colder weather, some fermenting material should be put round the beds; if there be a scarcity of hot stable manure, any kind of vegetable haulm, mixed with Grass mowings, may be used. Keep the shoots well thinned out, overcrowding being one of the greatest mistakes that can be committed in Melon culture, and at no season are its consequences so injurious as in the autumn, when the sun's power is declining. Raise the fruit well up on inverted flower-pots as it begins to ripen, in order that it may be fully exposed to the sun; as it approaches maturity discontinue syringing, and be careful not to give the soil too much water; it is necessary at this time of the year to use less than earlier in the summer, or it will interfere with the flavour, and be liable to cause the fruit to crack.

Cucumbers in frames should, as recommended earlier, be stopped at every joint where they show fruit, a practice which tends to prevent their getting so much crowded with superabundant shoots as they otherwise would be, but even under this treatment they will get too full of growth unless the knife is freely used from time to time in removing all that is not required. Where Cucumbers are wanted as late in the season as they can be had, and where there are no means of growing them except in ordinary garden frames, they should be assisted with manure water regularly after they have been some time in bearing, and above all continually syringed, getting to every part of the leaf surface, so as to keep them free from insects, without which all other attention will be unavailing. Where there are houses or pits in which to grow Melons and Cucumbers the above directions are equally applicable. Where Cucumbers are required for winter bearing, seeds should shortly be sown; as one of the principal matters as regards insuring success is to get the plants large and strong enough without unduly hurrying them before the season is too far advanced, and if the object be to have them fruiting during the early months of the year, on no account allow them to bear many before the turn of the season. Where winter Cucumbers are raised from cuttings taken from plants now in bearing, these need not be put in quite so early as seeds, as they will root very soon, and when the plants from which the cuttings are taken are perfectly free from red spider or thrips, those raised in this way are quite as good as plants grown from seeds.

Kitchen Garden.—In the south, where considerably less rain has fallen than in the more northern parts of the kingdom, the present has been a bad summer for culinary vegetables. Brussels Sprouts, early and late Broccoli, Savoys, and Kale, are little more than half the size they ought to be by this time in most places, and cannot possibly produce anything above a correspondingly meagre crop. Where, however, plants of these have been pricked out in nursery beds of prepared soil, as recommended in spring, that will have enabled them to be planted with good balls containing a mass of fibrous roots where they were to be grown in even the driest weather, provided they received a good soaking with water at the time, whereas if they have been allowed to stand crowded in the seed-bed they will have been all but useless for planting in such a season as this. In any garden, large or small, to give a reasonable chance of success, from year to year, it is necessary to note the causes of failure, so that they may be avoided for the future. In such parts of the country that have been thus affected by the weather I would recommend amateurs to plant every vacant bit of ground they have with Coleworts. If they have not the true variety let common Cabbages be put in, which, although inferior to Coleworts for present planting, will yet afford a considerable quantity of useful small heads. To make room for these, second early Potatoes, the tops of which in many places are dead, may be taken up, as there is nothing gained by leaving them longer in the ground after they have completed their growth. Put them until the weather gets colder in the coolest place available, an open shed is as good as anywhere, provided they are so covered that light is effectually excluded from them.

Endive and Lettuce.—Ground should now be prepared for the principal crop of Endive and autumn Lettuce; for these it ought to be well manured and in a moderately dry position; do not overcrowd the plants, especially Endive. It is no uncommon practice to plant these so close that there is not room to step between the rows to tie them up; planted thus thickly, the hoe cannot be used amongst them to loosen the soil and keep down weeds. The rows of Endive should be 15 in. or 18 in. apart, according to the condition of the soil, giving the most room where the growth is likely to be strongest. Lettuce, especially where the small Cabbage varieties, such as Tom Thumb, are planted, need not have so much room. More Endive should now be sown; for general use the Green-curled is most esteemed; but where the Broad-leaved Batavian is liked, a pinch of each should be put in. Do not sow the seeds too thickly; they are little liable to the attacks of birds or insects, and usually almost every seed vegetates. Previous sowings that are already up, if too thick, should be thinned out sufficiently to allow them room, or they get drawn up so weakly as to be long in getting hold when planted out. Some Lettuce—Tom Thumb, Black-seeded Bath Cos, and likewise the hardy Hammersmith—should also be now sown; the last-named sort is not equal in quality to the Cos varieties, but in many places it will stand the winter where other kinds would fail.

Leeks.—Many have deferred planting these in expectation of the ground getting sufficiently moistened by rains before moving them, but the season has now come that unless they are planted at once, there will not be time enough for them to attain any size before winter. Where the ground which they occupy is dry, give it a thorough soaking the day before they are planted; this will enable them to be taken up without much breakage of the roots.

Celery.—So long as the weather continues dry, both early and late crops must be sufficiently supplied with water, or it cannot possibly attain half the size that it should do. Earth up the earliest planted according to the time at which it will be required for use. The necessity for giving the soil a good soaking previous to any considerable quantity of it being drawn up to the plants cannot be too much impressed, inasmuch as neither rains nor artificial waterings have much chance afterwards of reaching the roots, the ridge of earth naturally throwing it off.

Ridge Cucumbers and Vegetable Marrows must be plentifully supplied with water, or they cannot possibly keep on bearing; it should be given in quantity sufficient to reach as far as the roots extend.

Onions.—These are this season more than usually late, but in many cases very small and much affected with the maggot. As soon as they show signs of completing growth they should at once be pulled up, or they will commence to make fresh roots, which injures their keeping properties. They are all the better for being dried quickly; where a moderate quantity only is grown that can be dealt with in this way the old method of spreading them thinly on a slate or tile roof has the advantage that if much wet weather should follow immediately upon their being drawn they are not so liable to root afresh as if laid on the bed to dry; or the simple plan may be followed of tying them in bunches of eight or ten immediately they are pulled and hanging them up on the outside walls of a building that has an overhanging eave sufficient to throw off the rains; the north side is the best for keeping them late in the spring, as there they have not the disposition to grow so early. Shallots, if not already taken up, should be at once removed to a dry place, and kept there.

Box Edging that was not cut in the spring should be gone over now, for if the cutting be deferred until later in the autumn it often suffers through frost, whereas if the work be done now the danger of this is avoided.

Orchids.

The Aerides, Vandas, and other plants in the East India-house will require constant attention, in order to keep up a healthy, growing atmosphere, and at the same time maintain a pure air by means of ventilation, for the air is of more importance to plants than heat. The evil of overheating Orchid-houses does not lie so much in the plants disliking the heat, as because those who grow Orchids in a high temperature neglect the ventilation in order to keep the heat up. Growing East Indian Orchids will bear any reasonable amount of heat, but they must have air and moisture in proportion, and if these be not supplied the plants soon die or settle down into a miserable state, from which they are not easily recovered. East Indian Orchids are perhaps more easily affected by these circumstances than those from other parts; hence it is that we often see those placed in small, close houses unhealthy and stunted, while we frequently see them in the perfection of health and vigour in badly glazed houses, and houses with ill-fitting lights, &c.; of course, no one would recommend such structures as a rule, but the circumstances mentioned should teach us, even if other evidence were wanting, that the plants thrive best when freely supplied with air. The Aerides of the A. Fieldingi and A. maculosum class and other Bombay varieties, although liking a tolerable supply of water at the roots when growing, succeed best when kept in a rather dry atmosphere. All the other Aerides, Vandas, &c., which are growing should be well supplied with water at the roots, and should have moisture constantly kept around them. All the Phalænopsis are now in full growth, and these, the Saccolabiums, and other growing plants in baskets, must not be allowed to get dry; on the contrary, they should be gone over every morning, and those requiring it should be thoroughly soaked, the small slugs and sails, so fond of the young leaves, being carefully looked after at the same time, or the plants will be much injured. Among recently introduced pests, the small yellow thrip is perhaps the worst to overcome; it is, however, happily unknown in some collections, but where it does get a footing it is very troublesome, frequently doing much damage, and greatly disfiguring the plants before it is perceived; if properly taken in hand, however, and well followed up, it is to be got rid of. Fumigation is of little avail against this variety of thrips, for as soon as the air of the house becomes unpleasant to it through Tobacco-smoke, it descends to its usual stronghold, the very heart of the plant, where the smoke does not reach, and there remains until it has cleared away; it is best, therefore, to frequently sponge the plants with Tobacco-water made from coarse Tobacco, which will not injure the plants, and to continue sponging them with it from time to time after all signs of the thrips have disappeared, taking care to pay particular attention to the heart and middle leaves of the plant. In this way this troublesome pest is to be got rid of, and any amount of care in that direction will not be thrown away, for they soon spoil the look and value of a collection.—James O'Brien.

Hardy Fruits.

It is now time that all summer pruning and stopping of shoots should be finished, as there is now no danger of the trees making sufficient wood growth, to be in any way detrimental to the formation and full development of fruit-buds for next season. Any such work still to be done should be completed as soon as possible, after which all the shoots should be neatly laid, or tied in, and the ripening fruit be exposed to the influence of sun and air, by having the foliage drawn on one side, or, if need be, removed altogether, but this should only be done when the leaves cover up the fruit, and so hinder its colouring properly. Should the summer continue hot and dry, watering will be a serious item of garden labour, as it is from this date to the end of September that fruit trees require most water. If that should be scarce, mulch deeply with litter or Grass. Gather Apricots, Peaches, and Nectarines a day or two before they are intended to be used, and before the sun touches them in the morning; they will then keep for several days in a cool room, and be all the better for it; of course they should be laid on some soft substance, such as dry Moss or wadding. Early kinds of Pears, such as Citron des Carmes, Belle de Bruxelles, and Jargonelle, are now sufficiently ripe to gather; it is not well to allow them to fully ripen on the trees, as then the flavour is not nearly so good, and the fruit soon decays. Wasps have not yet visited us, a fact doubtless attributable to the severe winter having killed them; it will be well, however, to take precautionary measures to get rid of them should they make their appearance. Let all runners required for forcing and new plantations of Strawberries be taken off as early as possible, in order that the beds may be cleared of runners and bad foliage, after which slightly "point" over between the rows, and give a fresh mulching of rotten manure. Water freely all newly-planted beds, to get growth completed by the end of September. A nursery bed of runners should be kept on hand to make good any failure that may occur.—W. Wildsmith, *Heckfield.*

PLATE XXXIV.

A NEW CYCLAMEN.

(C. CYPRIUM.)

Drawn by F. W. BURBIDGE.

Although there are few winter and spring flowering plants more acceptable than Cyclamens, or which better repay the little care and attention bestowed on them, they are far from being common in our gardens. Now, however, that a taste is springing up for them for fringing rockwork and for decorating the margins of the wild garden, we may expect fresh importations of them from the Greek Islands where they abound to be made in quantity. In collecting the tubers it is advisable to remember that drought or full exposure to the air is very prejudicial to their after-growth; therefore, it is necessary to pack them in moist Moss or soil so as to preserve them fresh and prevent evaporation. Imported tubers which have become thoroughly dried during transit are often four or five years before they produce leaves and flowers, while many of them never start into growth at all. Nearly all the species and varieties of Cyclamen seed freely, and the best plan is to sow the seeds as soon as they are ripe in well-drained pans of light rich earth; after sowing cover the surface with a thin layer of living Moss. The pans should then be placed in a cool, shady pit or frame, and kept moist until the seed germinates, which it generally does in about a month or six weeks. As soon as the first leaf is well developed the seedlings should be pricked off into boxes, or better still, transplanted on to a bed of light rich earth made up in a two-light frame, to which an abundant supply of air can be admitted during fine weather, and where they can remain until they are strong enough for planting out in the rockwork or wild garden. Cyclamens generally like a rich soil composed of good, friable loam, well-decayed vegetable matter and cow manure reduced to the state of mould and sweetened by exposure to the atmosphere before it is used. C. hederæfolium and its numerous seedling varieties grow best in a stiffer loam and stronger manure than the others. Few plants will grow and bloom more luxuriantly under the shade and drip of trees than Cyclamens if the soil be deep and rich, and they are admirably adapted for planting in warm nooks in the rock or wild garden, where they get partial shade from the mid-day sun and shelter from the effects of dry, cutting winds. An eastern or south-eastern aspect, screened from cutting winds, is best, affording, as it does, the requisite protection from heat, but a northern position suits them nearly as well. I have a piece of rockwork facing northwards covered with the hardy kinds, and from the end of August, when they begin to bloom, up to the end of March when the leaves begin to die down, it is much admired for the bright carmine, lilac, purple, white, and magenta-coloured flowers with which it is studded, and also for the beauty of the wax-like foliage. During the dull period of winter it is in full perfection, and few plants are more ornamental. Our woodcut illustration (p. 191) shows how these pretty little plants may be tastefully used for planting in the sheltered nooks of good root-work; it was prepared from a sketch taken in Mr. G. F. Wilson's garden at Weybridge. Strikingly beautiful, however, as Cyclamens are when grown in the open air, I have seen them grown in pots in a cool, shady frame with great success, and plants of C. coum, C. vernale, and C. Atkinsi, thus grown, will hold their own even with the larger habited or more tender Persian kinds now so extensively cultivated as winter and spring flowering pot plants for conservatory or drawing-room decoration.

Cyclamen cyprium.—This well-defined species, to which we have devoted a coloured illustration, has been cultivated by Mr. Atkins, of Painswick, for some years. It has rather small heart-shaped leaves of a dark green colour, marbled on the upper surface with bluish-grey, and of a deep, purple colour beneath. The principal veins of the leaves terminate curiously thickened, pale green points, which give a light and graceful character to the margin of the leaf. The flowers, which are pure white tinted with soft lilac, the restricted mouth being spotted with carmine-purple, are well elevated above the foliage, a character which distinguishes it from most of its allies, except C. persicum, from which its foliage serves to distinguish it at a glance. It is one of the most chaste and beautiful of all the hardy kinds. It is a native of the Isle of Cyprus, whence Messrs.

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CYCLAMEN CYPRIUM.

E. G. Henderson obtained it in quantity early in 1875, and from one of their plants our figure (which does but scant justice to the plant) was prepared.

Round-leaved Cyclamen (C. coum).—This, with the others of the same section—viz., vernum of Sweet (coum zonale), ibericum, Atkinsi, and the numerous hybrids from it—though perfectly hardy, and frequently in bloom in the open ground before the Snowdrop, yet, to preserve the flowers from the effects of unfavourable weather, will be the better for slight protection, or a pit or frame devoted to them in which to plant them out. I grow many in this way, and during the early spring, from January to the middle of March, they are one sheet of bloom. When so cultivated it is best to take out the soil, say 1½ ft. to 2 ft. deep, place a layer of rough stones 9 in. to 12 in. deep at the bottom, covering them with inverted turf to keep the soil from washing down and injuring the drainage; then fill up with soil composed of about one-third of good free loam, one-third of well-decayed leaf-mould, and one-third of thoroughly decomposed cow manure. Plant 1½ in. to 2 in. deep, and every year, soon after the leaves die down, take off the surface as far as the tops of the tubers, and fresh surface them with the same compost, or in alternate years they may only have a dressing on the surface of well-decayed leaves or cow manure. During summer, or indeed after April, the glass is removed, and they are slightly shaded with Larch Fir boughs (cut before the leaves expand) laid over them, to shelter from the extreme heat of the sun. As soon as they begin to appear in the autumn gradually take these off, and do not use the glass until severe weather sets in—at all times, both day and night, admitting air at back and front, and in fine weather draw the lights off, remembering that the plants are perfectly hardy, and soon injured if kept too close; they do not like frequent removal. C. coum album is a variety raised by Mr. Atkins, of Painswick, which received a first-class certificate from the Royal Hort. Soc., 1868. It has the dark plain foliage of C. coum, with flowers white, and dark mouth; hardy; same treatment as C. coum. It is a very distinct and interesting variety, well worthy of culture. C. Atkinsi, a hybrid of the coum section, raised by Mr. Atkins, has larger flowers, white, with dark mouth, and nearly round or ovoid leaves, variously marked. C. vernum of Sweet is considered by many as only a variety of C. coum, and for it I would suggest the name of C. coum var. zonale (from its marked foliage). I was for a long time unwilling to give it up as a distinct species, but no doubt there being sufficient permanent specific distinction to warrant its being retained as such, especially after seeing the many forms and hues the leaves of other species of this genus assume. Though this, as well as C. coum, retains its peculiarities as to markings very correctly from seed, so do some undoubted varieties of other species of Cyclamen. In Loddiges' "Bot. Cab." t. 108, some years previous to Sweet's publication, it is well figured as C. coum. There are specimens in various herbariums of this form under the name of C. vernum (Sweet), mostly from Iberia and Tiflis.

Hardy Cyclamens.

Iberian Cyclamen (C. ibericum).—This also belongs to the coum section. I fear the original type of the species as first imported into this country is lost; the greater portion now sold as such are hybrids of the Atkinsi group. There is some obscurity respecting the authority for this species and its native country; but there are specimens of it in the Kew and Oxford Herbariums marked "ex

Iberiâ." Leaves very various. Flowers: corolla rather longer than in C. coum; mouth constricted, not toothed; colour various, from deep red-purple to rose, lilac, and white, with intensely dark mouth; produced more abundantly than by C. coum.

European Cyclamen (C. europæum).—Tuber of medium size and very irregular form, sometimes roundish or depressed and knotted, at other times elongated. The rind is thin, smooth, yellowish, sometimes "scabby." The underground stem or rhizome is often of considerable length and size, sometimes even more than a foot in length. The leaves and flowers originate from stalks or branches, which emerge from all parts of the tuber. The root fibrils spring from the lower surface of the tuber as freely as from the upper, but are never so numerous as in C. hederæfolium; and there are usually two or three stems springing from different parts, and growing in different directions, from which the leaves and flowers arise. When these stems are much elongated and irregular, the plant becomes the C. radice-anemone, or C. anemonoides of some old authors. The leaves in this, as well as in most of the other species, vary much in outline as well as extent of the markings on the upper surface and colour beneath. Those from the more northern habitats are coarser and more decidedly dentate than those from some localities south of the Alps, where they assume in a measure the finer texture, rounder form, and more delicate markings of C. persicum. The leaves appear before and with the flowers, and remain during the greater part of the year. Flowers from June to November, or with slight protection until the end of the year. The petals rather short, stiff, and of a reddish-purple colour. The base or mouth of the corolla pentagonal, not dentate. Some of the southern varieties, by attention to cultivation under glass, may even assume a perpetual flowering character. The varieties C. Clusi, littorale, and Peakeanum are of this section. In these varieties the flowers become much longer, of a more delicate colour, often approaching peach colour, and are almost the size of those of C. persicum; pure white are rare, but pale ones are not uncommon: they are very fragrant. C. europæum thrives freely in various parts of the country in light, loamy, well-drained soil, as a choice border and rockwork plant. Where it does not do well in ordinary soil it should be tried in a deep bed of light loam, mingled with pieces of broken stone. In all cases it is best to cover the ground with Cocoa-fibre. It is a very desirable species on account of its delightful fragrance and long succession of flowers. I have often seen them luxuriate in the *débris* of old walls and on the mountain side with a very sparing quantity of vegetable earth to grow in.

Ivy-leaved Cyclamen (C. hederæfolium).—A native of Switzerland, South Europe, Italy, Greece and its isles, and the north coast of Africa. Tuber not unfrequently a foot in diameter when full-grown; its shape somewhat spheroidal, depressed on the upper surface, rounded beneath. It is covered with a brownish, rough rind, which cracks irregularly so as to form little scales. The root fibres emerge from the whole of the upper surface of the tuber, but principally from the rim; few or none issue from the lower surface. The leaves and flowers generally spring direct from the tuber without the intervention of any stem (a small stem, however, is sometimes produced, especially if the tuber be planted deep); at first they spread horizontally, but ultimately become erect. The leaves are variously marked, and the greater portion of them appear after the flowers, continuing in great beauty the whole winter and early spring, when they are one of the greatest ornaments of our borders and rockeries, if well grown. I have had them as much as 6 in. long, 5½ in. in diameter, and 100 to 150 leaves springing from one tuber. They are admirably adapted for table decoration during winter. The flowers begin to appear at the end of August, continuing until October. Mouth or base of the corolla ten-toothed, pentagonal, purplish-red, frequently with a stripe of lighter colour, or white, down each segment of the corolla. There is a pure white variety, and also a white one with pink base or mouth of corolla, which reproduce themselves tolerably true from seeds. Strong tubers will produce from 200 to 300 flowers each. I have had as many as 150 from one plant blooming at the same time. The varieties from Corfu and other Greek isles are very distinct and valuable additions; there do not appear to be sufficient permanent characters for specific distinction. They generally flower later, and continue longer in bloom. Their leaves rise with or before the majority of the flowers, both being stronger and larger than the ordinary type, with more decided difference of outline and markings on the upper surface of the leaves, the under surface being frequently of a beautiful purple. Texture thick, shining, and wax-like. Some of them are delightfully fragrant. They are quite hardy, but are worthy of a little protection to preserve the late blooms, which often continue to spring up till the end of the year. This species is so perfectly hardy as to make it very desirable not only for the rock but also for the open borders. It will grow in almost any soil and situation, though best (and it well deserves it) in a well-drained rich border or rockery. It does not like frequent removal. It has been naturalised successfully on the mossy floor of a thin wood, on a very sandy, poor soil, and it may be naturalised with perfect success almost everywhere in these islands. It would be peculiarly attractive when seen in a semi-wild state in pleasure grounds and by wood walks. It is very frequently sent out by English nurseries and bulb dealers as C. europæum, though perfectly distinct from that species.

C. græcum is a very near ally, if more than a variety of C. hederæfolium; it requires the same treatment. The foliage is more after the C. persicum or southern variety of C. europæum type than most of the hederæfolium section; the shape of the corolla and toothing of the mouth the same. C. africanum (algeriense macrophyllum), much larger in all its branches than C. hederæfolium, otherwise very nearly allied; is hardy in warm, sheltered situations.

Spring Cyclamen (C. vernum).—Tuber round, depressed, somewhat rough or russety on the outer surface; fibres rising from one point on the under side only. Under cultivation it has little or no stem, but leaves and flowers proceed direct from the upper centre of the tuber, bending under the surface of the soil horizontally before rising to the surface, corolla long, segments somewhat twisted, mouth round not toothed, colour from a delicate Peach to deep red-purple, seldom white, deliciously fragrant; flowers from April to the end of May. Native of South Italy, the Mediterranean, and Greek Isles, and about Capouladoux, near Montpellier. Leaves rise before the flowers in the spring; they are generally marked more or less with white on upper surface, and often of a purplish cast beneath; fleshy; semi-transparent whilst young. For many years I believed this species to vary in the outline and colouring of the foliage less than any other, but I have now received imported tubers from Greece, with much variety in both particulars, some of the leaves quite plain and dark green, others dashed all over with spots of white, others with an irregular circle of white varying much in outline. Among these every intermediate form occurs, up to that figured and described by Sibthorp and Sweet. The latter variety is the one more generally met with, and is reproduced from seed very true and unvarying. This, though one of the most interesting species and perfectly hardy, is seldom met with cultivated successfully in the open borders or rockery; it is very impatient of wet standing about the tubers, and likes a light soil in a nook rather shady and well sheltered from winds, its tender, fleshy leaves being soon injured. The tubers should also be planted deep, say not less than 2 in. to 2½ in. beneath the surface. I have grown them for many years in a border and on rocks without any other protection than a few Fir boughs lightly placed over them to break the force of the wind and afford a slight protection from the scorching sun. Some authorities give C. repandum as a distinct species, but I consider them identical, the only difference being in the shape and markings of the leaves, which are very variable. It is generally cultivated in England under the name of C. repandum, but most of the best Continental botanists adopt the name vernum for it, and it is no doubt the original C. vernum of Lobel.

Genista præcox.—One of the most beautiful and in every way desirable, spring-blooming, hardy shrubs is the Broom whose name stands at the commencement of this paragraph; and yet how seldom is it to be met with in collections or shrubberies. Till about two years ago it was quite unknown to me, when it was strongly recommended by Mr. Parker, of Tooting, who furnished me with a plant, which has been the admiration of every one who has seen it in the month of March, when there is so little in flower in the way of hardy shrubs. The young growth of the previous year (which sprouts all over the bush with the greatest freedom as soon as the flowering is over) is literally covered with conspicuous Pea-shaped cream-coloured blossoms, giving the bush a most beautiful and ornamental appearance. It is but a shy seeder, the pods (of which very few set at all in comparison with the sheets of blossom produced by the plant) usually containing but one perfect grain of seed. I have, however, saved a good deal of seed this year, and shall be happy to send half-a-dozen grains (as far as my stock of seed will allow) to any reader of The Garden who may see these lines and thinks it worth while to send me a stamped envelope, addressed to themselves, to my address. I have also now in bloom the beautiful summer and autumn-flowering Genista ætnensis, or Mount Etna Broom, so seldom met with except in Botanical Garden collections, such as that at Glasnevin, where I first saw it in the form of a fine specimen between 20 ft. and 30 ft. in height, and literally covered with small, bright golden blossoms. For a long time I sought for this plant in vain in the catalogues of our principal nurserymen, and at last found it in the well-stocked collection of Messrs. Dickson & Turnbull, of Perth; it is a quick grower, and should be included in every collection of ornamental hardy flowering shrubs.—W. E. Gumbleton, *Belgrove, Queenstown, Co. Cork.*

THE KITCHEN GARDEN.

THE POTATO CROP OF 1875.

(PRODUCE OF SEEDLINGS AND BEST MODE OF STORING).

Though somewhat late in the year to be considering last year's crop, it may interest some of your readers to know the result from twenty-four varieties grown from seed carefully selected and cultivated in a good Potato soil—sandy loam—in East Notts. The result is shown in the following Table:—

Varieties.	Weight in lbs.	Seeds. No. of Sets.	Distance apt. Rows	Distance apt. Sets	Weight of Crop in lbs. Good	Weight of Crop in lbs. Died.
1. Racehorse	2½	48	2 ft.	9 in.	34½	—
2. Ashleaf Kidney	,,	58	,,	,,	44	—
3. Bresee's King of the Earlies	3½	46	2½	10	67	—
4. Early Vermont	1¼	73	4	1 ft.	16¼	½ lb.
5. Early Rose	7	58	2½	,,	70½	—
6. Myatt's Ashleaf	3½	50	,,	10 in.	43	2
7. Bresee's Prolific	,,	40	,,	1 ft.	54	2
8. Brailsford's Seedling ...	,,	,,	,,	,,	31½	3½
9. Late Rose	7	73	,,	,,	123	1
10. Climax	3½	50	,,	,,	75	—
11. King of Potatoes	,,	35	,,	,,	36	—
12. Waterloo Kidney	,,	53	,,	,,	41	1
13. Harbinger	5½	69	,,	,,	87½	—
14. Peach Bloom	3½	36	,,	,,	39	—
15. White Don	7	55	,,	,,	53	1
16. Oxfordshire Kidney... ...	14	115	4	14 in.	130	1
17. Queen	7	55	2½	,,	43	1
18. Model	14	89	4	,,	159	—
19. American Red Seedling ...	7	49	2½	,,	75	3
20. Paterson's Victoria	14	105	4	,,	76½	2
21. Red Fluke	,,	84	4	,,	231½	—
22. Wood's Scarlet Prolific ...	,,	85	,,	,,	135	—
23. Sutton's Red-skin Flourball	7	40	,,	,,	83	—
24. Lapstone Kidney	2	18	,,	1 ft.	10	3

The only manure applied was the ash from a garden fire and a small quantity of thoroughly rotten stable manure (from hot-beds of the summer of 1874). It would, of course, have tended to the increase of the crop if a heavy dressing had been applied in the autumn of 1874 in preparation for the crop of 1875; but in the present case, from various causes, it could not be done. The same ground is never used for Potatoes two years running, but half the garden is taken one year and the other half the following year. None but whole sets were used, many years' trial having given convincing proof that—weight for weight in the seed used—cut sets have no advantage over whole sets, and that invariably the produce from cut sets is less strong in constitution than from whole sets—that is, though the produce may seem equally good to the eye, if a crop be grown the following year and disease be prevalent, the produce from the seed of the cut sets will suffer much more severely than that from the whole sets. It may seem almost needless to remark that too much attention can hardly be paid to the selection of seed, but the foregoing crop shows the advantage of such attention. Last year was in many respects very unfavourable to the Potato crop—very dry in the early part of the season, up to June 9th, and continuously wet from that time—and disease was very prevalent. In the neighbourhood in which the above crop was grown, most gardens suffered considerably—to such an extent, in fact, that in some cases there was not a sound Potato left by the end of October. The trifling extent of the disease in the foregoing crop can only be attributed to the very great care taken in selecting the seed—none but thoroughly ripened and well-sprouted tubers being used, and not one (nor the crop either) having been kept during winter in what is called a "pie." It is really wonderful how the use of the "pie" can be maintained except under the plea of convenience, and yet there are those who still believe it is the only proper way of storing Potatoes. On asking an old gardener the other day, "Well, have you given up putting your Potatoes into a pie yet?" "No," he replied, "and never shall; you can't keep them in any other way." Argument would have been quite useless; but the "pie" has absolutely nothing to recommend it. It may be said that in the case of the farmer, at least it saves the labour of carting the Potatoes home; but they are gathered on the land into carts, and the labour of making a properly constructed "pie" is certainly more than that of storing them as they should be stored, with the carting home into the bargain. What are the first conditions for keeping Potatoes well? Dryness and coolness; and dryness even more than coolness. And what do you get in the "pie?" A dampness and warmth which it is impossible to prevent. The Potatoes soon begin to sweat, and there is very soon a moist heat which is the very thing to develop fungus growth, "peronospora," or anything else; and if there be any germs of disease in the heap, by the end of January the greater part is a wet mass of corruption; and if there be no disease all firmness and flavour are destroyed long before the spring. Even for the crop of a farm, there are few places so ill provided with buildings but what fully sufficient space could be found on a granary or barn floor. A sack of Potatoes weighs 2 cwt., or ten sacks to the ton; the diameter of the sack is about 18 in., therefore 8 ft. by 4 ft. is ample space for a ton, or if a second tier of sacks be put on the first, for two tons. A layer of straw under and a thicker layer over and round them, are all else that is required; and this should not be used until hard weather is likely to set in. But it is the storage of garden crops which will be of more consequence to most readers of The Garden, and the best place for these is a cellar, if dry, and with ventilation allowing a free current of air right through, except in hard weather, when all vents must be closed. Sacks, rice bags, old boxes, hampers, barrels—any or all of these may be used to hold the Potatoes, but they should not rest on the ground. Let them be set on rough planks raised 1 ft. from the ground on tiers of bricks, and in case of severe weather covered over with matting, old carpets, or straw (the coverings to be removed when hard weather is over), and in the June following they will be firmer, sounder, and of better flavour than a Potato out of a "pie" at Christmas. The appliances described are of the simplest description, so as to be within the reach of all. They can be improved upon to any extent by those who have the means. The smaller each receptacle is the better; half-a-dozen hampers are better than one big barrel; the Potatoes are more under command, and being in smaller bulk, there is less heating, and therefore less tendency to grow. Of course this applies more particularly to Potatoes for late use; not to those used before or up to February. If no cellar be available, a coach-house is the next best place, the manner of storing being the same as in the cellar. If there be no room in the coach-house, a place may be found in the hay-loft. In this the hampers or whatever the Potatoes are put into may be set upon the floor, but coverings of some kind must be used to exclude light. Failing any of these places, an outhouse or shed will do, keeping the Potatoes off the floor, and taking care that sufficient means are used to have them safe from frost. It should have been, perhaps, before remarked that if the Potatoes are to keep well, care must be taken that they are properly dry before being stored at all. If raised in dry and fine weather, it will be sufficient to leave them on the ground for a few hours to dry, but it is a better practice to put them into baskets as lifted and take them straight away to a paved yard or dry path, and spread them out on a mat, turning them over once or twice with the hand, and stowing them away by sundown. They can be carried on the mat to wherever they are to go. If the ground or the weather be wet when they are dug, they ought to be spread out to dry the first day the weather is fit, and on more than one day if necessary. "What a lot of trouble!" some may say, but it is trouble that will pay better than having to sort out a lot diseased through damp, or going through that weary process two or three times in the spring of breaking off long watery shoots, the result of storing wet or keeping in a damp place, the said shoots having in addition taken away half the good of the Potato.

Seed Potatoes should be treated differently, and never kept in the dark at all. Of course they must be made safe during hard frost. It is well to sort them out when the crop is dug, choosing clean, well-shaped tubers of 2 oz. or 2½ oz. in weight, as near as may be, taking care only to choose from roots perfectly free from disease. If only one tuber of the root show signs of disease, reject, as regards seed, all the rest, however good they may seem; and it is only by thus selecting, at the time of digging, that you can make pretty sure that you are not choosing seed with the germs of future disease already there. Dry thoroughly by exposure for two or three days in the full sun, but only in the sun, that is, not left out at night. This is easily managed if light boxes, 18 in.

square and 3 in. deep, be used to keep the seed Potatoes in. These boxes hold 14 lbs. weight of tubers of the size above mentioned. After being thus dried, the seed should be kept in the boxes, crowns upwards, in a cool, dry place in full light—such a place as an airy granary or corn-chamber, or an empty room in a house—the boxes placed side by side on straw, and if hard weather come, immediately covered with a thick layer of straw, which should be removed as soon as the weather again becomes open. The result by planting time will be stiff, short, vigorous sprouts, and if the crop be not equal to expectation, the fault will not have been in the seed or in its preparation. Any number of varieties can thus be prepared and securely kept separate with the least amount of trouble, though it is surely useless to look for the best results in anything if the main object be to avoid trouble.

Marnham. E. C.

EFFECTS OF THE DROUGHT ON VEGETABLES.

Except in odd places where the soil is more than ordinarily deep and moist, this has been one of the very worst summers experienced for a considerable time for vegetables in general. The long-protracted cold weather in spring and early summer had the effect of causing quantities of seeds early sown to perish, or to come up so weakly as to be of little use. Peas and everything else that slugs will eat became, as they always do when not able to make progress, a prey to these pests to an extent seldom seen, and that even in well-managed gardens not often troubled with them. Many insects which in ordinary seasons are brought to life by solar heat were this spring so much later than usual, that the birds that feed upon them were driven by starvation to attack vegetable life. Everything swarmed and continues to do so with aphides, green, grey, and black, dwarf and Runner Beans in some places being as badly affected with black fly as Cherry trees often are. Cauliflowers, Cabbages, and Broccoli for autumn, winter, and spring have been all along affected with the grey aphis, as closely packed on the leaves as they could hang. In most gardens there has been little chance of planting these vegetables under conditions that enabled them to make the desired head-way, hence they are small, weak, and so late that they cannot possibly produce more than half a crop. Early Peas were very late as well as light. The successional crops hurried in by the parching weather that ensued were over long before their usual season, and the late ones do not promise any better. Cauliflowers and Lettuce have been worse than ever I recollect seeing them. Carrots and Onions are small, and both are badly affected with grub. Altogether it has been a poor season for market growers, and the future is anything but bright. Many, too, in private places will be sorely put to their wits' end to provide for the winter. In places where water is insufficient, or an inadequate amount of labour to apply it, the land will produce very little, and that little indifferent in quality.—T. Baines.

A SELECTION OF DWARF PEAS.

Nothing is easier on presenting a list of Peas than to take a dozen or so quite at random, arrange them in their order of ripening, and submit them as a good garden selection. Visiting the interesting old rectory garden at Woodstock a few days since, I was much struck with the admirable selection of dwarf Peas Mr. Fenn had there, and which seemed admirably to suit a small garden. First, and perhaps dwarfest, was the Multum in Parvo, a first early wrinkled Marrow, as early as the best White Round, and of quality equal to that of Veitch's Perfection. This grows to a height of 18 in. when supported by small sticks, and can be sown at 2 ft. apart. Immediately following came Mr. Laxton's superb dwarf Pea Unique, a variety that a recent writer on Peas evidently did not know was the dwarf William the First; this also reaches 18 in. in height, has good full pods of deep green, and although not equal to Multum in Parvo in quality, is rather a better cropper. It is certain to become immensely popular as an early dwarf Pea. Next in succession was Dean's Dwarf Marrow, a variety that is at once dwarfer and an improvement upon Advancer. It reaches a height of 2 ft., pods most abundantly, is a wrinkled Marrow of the best quality, and is very hardy. Allied to this and in close succession is Dean's Robert Fenn, a remarkably fine dwarf wrinkled Marrow, having large pods full of Peas of the finest quality. This also grows 2 ft. in height, and is a capital cropper. Next in succession was a row of Mr. Turner's fine new Marrow Dr. Maclean, a capital Pea of the Premier type, but having larger pods. This grows about 3 ft. in height, and is a most abundant cropper. Almost equal in succession followed two of Mr. Laxton's fine new dwarf Peas, Supplanter and Marvel, both reaching a height of 3 ft., and producing long handsome pods in great abundance. Marvel will no doubt soon be in great request as an exhibition Pea, as the pods are extra large and well filled. Last in order came that capital late Marrow, so aptly described as a dwarf Ne Plus Ultra, Laxton's Omega, a Pea that reaches 2½ ft., is of superb quality and an abundant cropper. Mr. Fenn truly said that it would have been impossible to have got from other sorts Peas in greater abundance or of better quality than these had yielded. As a special selection for very small gardens I give Unique, Robert Fenn, and Omega; and for larger gardens a capital succession of dwarf kinds will be found in Multum in Parvo, Unique, Dean's Dwarf Marrow, Dr. Maclean, Marvel, and Omega. D.

Clubbing-in Broccoli and Cabbages.—I have found the following remedy of the greatest service in cases of clubbing-in Broccoli and other varieties of the Cabbage tribe. Make a mixture of Gishurst Compound and Pooley's Tobacco Powder in a pail of water, adding a little stiff loam to give the mixture some consistency and well puddle the roots with it before planting, after which give the plants another good watering, especially round the collar of the plant. Since the application of this remedy no fresh cases of clubbing have manifested themselves, while several plants which had become clubbed in the seed-bed are now healthy and vigorous.—J. Rose, *St. George's Hill, Byfleet, Surrey.*

Dwarf Broad Beans.—In all vegetable gardens Beck's Dwarf Green Gem Bean should have a place. It is much superior, according to the "Gardeners' Chronicle," to the old dwarf Cluster or Fan, a white variety, and from which it sported at Shipston-on-Stour some fourteen years ago. Being of a free-branching, fan-shaped habit of growth, it requires to be sown 9 in. apart in well-manured ground; and there it pods with great freedom. In the moist midland and northern districts it succeeds well, and is deservedly a great favourite. It may be said to have almost driven the old Early Mazagan Bean out of cultivation, and the latter is only a kind of civilised Horse Bean, used for field purposes. Sportiveness appears to be a characteristic of this type of Bean, for in addition to the white we have a green Windsor, and in addition to the white Long-pod, a green one also. The green forms are the most delicious from a culinary point of view, but fashion—or shall we say prejudice?—encourages the cultivation of the white rather than the green forms.

Celery Blight.—Having been for some years troubled with Celery Blight, the attacks of which are readily recognised by the leaves of the plant looking as if they had been scalded, I determined to seek a remedy which should either kill or cure. I directed my kitchen gardener to fill his 36-gallon water-barrow with sufficient water to dissolve two 1-lb. boxes of Gishurst Compound, mixing with it 1 lb. of Pooley's Tobacco Powder, and filling up the whole with boiling water, stirring all well together. The mixture, after being allowed to stand for some twenty-four hours, was used to water the affected Celery plants—a watering can with a very fine rose being employed for the purpose. The plants, having been well saturated with this mixture, were then examined, and the grubs which had burrowed in the leaves were all found to be dead. The crop at the present moment looks most flourishing, the mixture having evidently acted not only as an insecticide but as a fertiliser. About three weeks after I repeated the same treatment with another crop, with precisely the same results.—J. Rose, *St. George's Hill, Byfleet.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Potato Blanchard.—The Rev. W. F. Radclyffe, of Okeford Fitzpanie, writes in praise of this recently-introduced Potato; he says it is a capital cropper, excellent in flavour, and handsome. Mr. Dancer, of Chiswick, is also much pleased with it; with him it is also a great cropper and excellent in quality. It was originally introduced here from France by the Messrs. Vilmorin & Co., of Paris, who sent it to Chiswick for trial with other Potatoes. It should be classed as a late second early, of robust, branching habit; its tubers are of good size and round, the skin is white, and much marked with purple. It is a very handsome and distinct Potato, a capital keeper, and well worthy the attention of growers for market.—D.

The Trebons Onion.—This is another of the Messrs. Vilmorin's introductions, grown during the past season at Chiswick. It is a large globular form of the White Spanish type, but not quite so precocious, and, from spring-sown seed, scarcely ripens in good holding ground. Sown, however, in the autumn with the Tripoli and all the White Spanish forms, including the Nuncham Park, Banbury Improved, and others, it exceeds all in size and evenness, and is now ripening off, but rather later than the other sorts. It will keep well into the winter, and, grown in this way, would make a formidable rival to the spring-sown kinds. The present season will make many growers alive to the value of autumn-sown onions.—A. D.

THE BUR-REED FOR TYING.

It is a matter of surprise to me that the leaves of the Common Bur-reed (Sparganium ramosum and S. simplex) are not used for tying more than they are by English gardeners. The Sparganium ramosum is common in every marsh and ditch, and is better for the purpose than S. simplex, which is somewhat scarcer. Nothing can exceed the suppleness of the leaf, which never wounds the plants around which it is tied. In France we use immense quantities of them, especially as ligatures for budding and grafting, as they spare us the trouble of untying them, the growth of the tree breaking them in the winter when they become rotten. The leaves of the Bur-reed are gathered in July and August and dried. When required for use it is only necessary to damp them. F. Jamin.

Bur-reed. Reedmace.

Bourg-la-Reine.

[The leaves of the Reedmace (Typha latifolia) might also be used with advantage for the same purpose.]

GARDEN RECEIPTS.

American Blight.

The American Blight (Aphis lanigera or Eriosoma Mali) is most destructive to Apple trees, breeds fast, and spreads with great rapidity. In the garden or orchard, where it makes its appearance on a single tree, if left unmolested, it will soon be found in quantity on the surrounding trees, even at a considerable distance. It establishes itself in any crack or inequality in the bark, and breeds in quantity, giving the trees for a portion of the year the appearance of being partially coated with cotton-wool. Like most other insects that attack the bark of plants, the injury it effects is not so soon apparent as in the case of such insects as confine their depredations almost exclusively to the leaves. It causes unsightly protuberances on the bark, and ultimately reduces the trees which it attacks to a stunted, unhealthy condition. It is difficult to completely eradicate it, its destruction being well-nigh impossible when it once gets established in large orchards. The amount of labour it would require to eradicate it when it attacks large trees would preclude the possibility of attempting the experiment, but in moderate-sized gardens where the trees are small, it can be destroyed, especially if there be no delay in taking means for its destruction as soon as its presence is discovered.

Brushing.—This has often proved a remedy if applied early. Provide a small flat brush, shaped like a diamond, and measuring about 5 in. in length by 2 in. in width; with this brush scrub all infected parts, and the bugs will disappear. Unquestionably, some which lie more immediately under the rough bark may subsequently show themselves, but, if the new enemies be attacked as often as they display their downy bed on espaliers and dwarf standards, they will give no further trouble. A small brush, called a spoke brush, may also be used with advantage where access to the insect is difficult from the range of the branches.

Gas Liquor.—Mr. Baines has used the ammoniacal liquor from the gas-works with great success. He says:—"Some years ago Woolly Aphis made its appearance on half-a-dozen trained Apple trees at one corner of the garden. One of these was of an inferior kind, consequently I determined to experiment upon it. First, I procured from the gas-works some ammoniacal liquid; one-half of the tree I painted over with the liquor (full strength), the other half with it diluted with water to the extent of one-half. The application was made as soon as the leaves had fallen in autumn. The destruction of the insects was complete, as also the tree on the side dressed with the liquor in its undiluted state: the other side painted over with the liquor diluted was not injured in the least; nevertheless, I would advise any one using this remedy not to use the liquor in a stronger state than one-third to two-thirds water, for although on several subsequent occasions I used it at the strength of half water with the most effectual result, and without injury to the trees, yet I believe that the liquor obtainable in some places is much stronger than in others."

Goose-grease and Sulphur.—Mix goose-grease and flowers of sulphur together, in the proportion of 8 oz. of the former to 2 oz. of the latter, and apply with a paint-brush.

Lime.—Take ½ peck of quicklime, ½ lb. of flowers of sulphur, and ¼ lb. of lamp-black. Mix with boiling water, so as to form a thick paint; with this, in winter, when the leaves are off, paint the branches, having first removed all loose bark. Remove the soil from the bottom of the stem to the main roots, and paint the roots as far as they are exposed. The paint should be warm when used. When it has become dry, the trees should be looked over, and all cracks and holes stopped with well-worked clay. After frost, the clay stoppings should be dressed again, to close any cracks that may occur. In France, Apple trees suffering from American Blight are treated in the following manner:—The earth is removed from about the roots, on which a quantity of slaked lime is deposited; after this the earth is replaced. The remedy is said to be quite successful.

Oil.—In the case of trees in pots, Mr. D. S. Gillett, of the Court Gardens, Great Marlow, recommends that they should be thoroughly painted over with ordinary linseed oil, the operation to be repeated if necessary. Train oil and other fresh oils have been used with success, but in applying these care should be taken not to touch the buds. Coal-tar, naphtha, paraffin oil, and petroleum, laid on with a paint-brush have been used with good effect. Paraffin oil and petroleum may be safely used upon hard wood, but not upon wood that is green and tender.

Soda and Turpentine.—Dissolve 1 lb. of soda in a gallon of rain-water; shake this up in a vessel with a pint of spirits of turpentine until they amalgamate; add more water to make the quantity up to 10 gallons. Apply to the trees with a garden-engine or syringe having a fine rose.

Soft Soap.—M. Charles Joly, the Vice-President of the Central Horticultural Society of France, gives the following remedy for eradicating this troublesome pest:—To 7 lbs. of soft soap add 1 lb. of train oil, two or three handfuls of soot, and flowers of sulphur are to be mixed with a pailful of lime-water. When thoroughly incorporated throw in sufficient powdered clay to make the mixture of the consistency of butter. Spread a cloth beneath the affected tree, and scrape off all the Moss and bark which seem to be attacked by the Aphis, taking care to trim the rough portions of the bark and to clear out the crevices. Remove the cloth and burn everything that has fallen on it, and paint the whole of the trunk of the tree and the lower branches with the soap mixture, giving an extra dose to all crevices and cracks. Autumn is the best time for the operation, as the winter rains wash the soap mixture off the tree down to the roots, amongst which a few of the Aphides that escaped the soap mixture may have taken refuge. It cannot be too frequently repeated that the Woolly Aphis always takes up its winter quarters round the collar of the root, a fact that is too frequently lost sight of.

Ants.

The following methods of destroying these troublesome pests have been gathered from various sources :—

Alum Water.—Take 2 lbs. of alum and dissolve it in three or four quarts of boiling water, letting it stand on the fire until the alum is all dissolved; then apply it with a brush while nearly boiling hot to every joint and crevice in closets, pantry shelves, and the like. Brush the crevices in the floor of the skirting or mop-boards if there be any suspicion that they harbour ants.

Bones.—An effectual way of destroying ants in places where boiling water cannot be used is to lay half-picked bones about. These will soon be covered with ants, and can then be thrown into a vessel of boiling water, after which they should be again laid down to attract a fresh batch of victims. By persisting in the use of this trap a house will be completely cleared of ants in a short time; the sooner, of course, in proportion to the number of bones employed.

Camphor.—If the ants have formed their nest at the root of a plant, pour upon them a quart or so of warm water, in which a piece of camphor, the size of a Hazel Nut, has been steeped. This thoroughly destroys them, and is not in the least injurious to the plant. Camphor placed wherever table linen is kept is said to drive away ants most effectually.

Carbolic acid.—Some years ago, says a correspondent in the "Times," at my house in the country a colony of ants established themselves under the kitchen flooring. Not knowing the exact locality of the nest, I endeavoured to destroy the insects with treacle, sugar, arsenic, &c., but although I slew numbers thus the plague still increased. At last, bethinking myself that ants dislike the smell of tar, I procured some carbolic acid, and diluting it with about a dozen times its weight of water, I squirted a pint of mixture through the air-bricks under the flooring, and my enemies vanished that day never to return. It has always been successful.

Carbolic Soap, Brook's Liquid.—Mix a very small thumb-potful of this liquid with a gallon of water, and sprinkle the ants with it. It kills them instantly; it mixes with the water at once without any trouble.

Chalk.—To prevent ants from climbing trees scrape the bark in a ring about 2 in. wide around the tree; then take a piece of chalk and rub it on the ring all round till no green bark can be seen. The moment the ants' feet touch the chalk it offers no solid footing, and they fall back, not one being able to ascend. A chalk mark, at least half an inch in breadth, around the upper edge of sugar barrels, boxes, &c., will not admit one ant into the interior. The same mark drawn on the edges of shelves will also prevent the approach of an ant. The chalk mark must, of course, be perfectly continuous.

Flower-pot Trap.—Suppose a colony of ants to be commencing operations on a lawn, it is an easy matter to trap them all by placing a large empty flower-pot, with the hole stopped, over it. The ants will build up into the pot, and in a short time it may be lifted with a shovel and carried away and dropped into a vessel of water, which will make an end of them.

Flowers of Sulphur.—Flowers of sulphur are very useful in checking ants where boiling water cannot be used.

Gas Tar.—When ants make a run up the stem of a fruit tree, a line of gas tar all round will put a stop to their progress, and do no harm to the tree.

Guano.—It is not generally known that fresh Peruvian guano will drive ants from any spot, however firm a hold they may have obtained on it.

Mortar.—Make a mortar bed of their nest, stirring the ants in with the mud until their nest becomes a mass of mortar, which may then be removed.

Oil of Vitriol.—Kitchens and rooms on the ground floor may be cleared of ants by carefully pouring some strong oil of vitriol (sulphuric acid) down each of the holes. The dose will prove fatal not only to the living insects, but also to all their eggs.

Osier-bark Steep.—M. Colin Lebert, of Blois, has found that water in which the bark and parings of the Osier have been soaked, will remove ants. On one occasion, he says, perceiving a young tree which was infested with ants, I sprinkled it with Osier steep, and, to my surprise, the ants fell off as if immediately dead. The result so struck me that I determined to again try the effect on a nest; this time I was sure of the instantaneous effect, and I concluded this water was certain death to them. I have also proved that it is in no ways injurious to the plants; on the contrary, when once freed from ants, they thrive with greater vigour than before. The Osier steep forms, therefore, a simple and effective means of getting rid of these little depredators.

Petroleum.—Pouring a little petroleum upon their nest every few days will effectually kill or banish ants. Paraffine oil, benzoline, and kerosene are also very effective.

Putty.—Mr. E. Whitehead, of Blackburn, strongly recommends putty as a cure for ants. His plan is to put five or six lumps of putty in different parts of the house, when they almost immediately become covered with these little pests. He then takes another piece of putty about the size of a teacup, in a rather soft state, and dabs it on the lumps previously laid down, a plan by which thousands may be trapped in a few minutes.

Quassia.—The following mixture has been found successful:—Four ounces of Quassia chips, boiled for ten minutes in a gallon of water, dissolving in the liquid while cooling 4 oz. of soft soap.

Quicklime.—Perhaps as good a way as any of exterminating a nest of ants is to dig the nest open and flood it with a kettle of boiling water. If a bushel of quicklime be then thrown in and the earth replaced, the colony will be broken up, and the few ants left will seek other quarters.

Raw Meat.—A very effectual plan of getting rid of ants is to place raw meat in dishes or vessels of any kind about places which they infest, and, as they prefer that kind of food to any other, they surround it in thousands. Boiling water is then poured upon them, and this, if persistently applied, with the bait above recommended, will in time effect a good riddance.

Soft Soap and Potash.—In the "Revue Horticole" for September, 1870, the following method of destroying or banishing ants is described as having proved quite successful:—Take 2 oz. of soft soap, 1 lb. of potash, and about 2½ pints of water. Boil the whole together for some time, stirring the ingredients occasionally. The liquor may then be allowed to cool. With a pointed stick or dibble make holes here and there in the soil infested by the ants, at a safe distance from any plants which may be growing there, to avoid any chance of their roots being injured by the mixture (although this is doubtful), and fill the holes once or twice with the preparation. By this means M. de Forghet was completely successful in clearing his Melon beds of these troublesome insects.

Sweet Oil.—Fill small phials two-thirds with water, and add sweet or any other oil to float on the water to within ½ in. of the top. Plunge these upright in the ground, leaving only ½ in. standing out, near the nest or runs of the ants. The ants will come for a sip and go home to die. No insect can exist with oil stopping up its spiracles or breathing pores.

Treacled Sponge.—In houses and other places where hot water cannot be poured on the soil without danger to the plants, pieces of coarse sponge dipped in diluted treacle will form a most effectual trap. The ants will crowd into the sponges, which should be taken up from time to time and thrown into a vessel of boiling water. Thick treacle spread on pieces of brown paper is also very effective; they get entangled in the mass when sucking it, and their bodies may be swept off the edges at different times till the nests are much thinned of them.

Various.—Turpentine, gas-water, lime-water, a decoction of Elder leaves, chloride of lime, and chloralum, dissolved in water, soot, wood ashes, soap-suds, tar, paraffin oil, and benzoline, have also been recommended.

Water.—If the ants' nest should be in a pot amongst the roots of a plant, the best way is to immerse the pot and plant in cold water, and let it stand for five or six hours, by which time the ants will all be drowned and their eggs destroyed. One of the most simple and effectual ways to destroy ants is to pour boiling water on the nests at night, but in those cases where boiling water cannot be applied recourse must be had to some other remedy.

Yellow Prussiate of Potash.—Yellow prussiate of potash (ferrocyanide of potassium), 1 drachm; raspings of Quassia, 1 drachm; sugar in sufficient quantity to form a syrup. The ants are said to devour this greedily and die almost immediately.

It must be borne in mind that in applying any of the above remedies, it may be necessary to repeat the dose several times. The ant is extremely tenacious of life, and is one of the "die-hards" of the insect world. Not only this, but during the breeding season, as instinct leads it to carry off its eggs to a place of safety the moment that danger threatens, the immediate neighbourhood of the nest must therefore be looked after, as well as the nest itself. When the ants are caught alive they must be at once carried away to a distant spot, and either burned or drowned.

Aphides.

The Aphides, of which there are some fifteen reputed species, are amongst the most troublesome of the many insects that find their way to the garden. There is hardly a plant upon which they will not settle, and they multiply so fast that sometimes as many as twenty generations are produced in the course of the season, and a single female may be the ancestor of five millions in the fifth generation. The most destructive are the Green Fly (Aphis rosæ), which attacks Roses and indoor plants generally; A. pruni, a light green insect, which does much mischief to the Plum trees; A. fabæ, a black fly, which attacks the tops of Broad Beans; and A. cerasi, the black fly, which does so much mischief to Cherry trees. In many cases, from their numbers and the wide field of their attacks, it is impossible to do anything for their destruction. But on all plants grown under glass, as well as the better class of out-door fruits, it is imperative to destroy them. The means for their destruction, in many cases, must be modified according to the different description of plants they infest, as the remedy that may be safely employed in the case of one plant would be death to another, similarly applied. Fumigation with Tobacco, or the numerous preparations made from it, is the most general as well as the best method for their destruction under glass; but, even here, there are numbers of subjects upon which they cannot be killed by this method without serious injury to the plants. This is the case with many Orchids, consequently, where these and similar thin-leaved plants are grown in a house that it becomes necessary to fumigate, they should be removed. And it may be remarked that the more heat, shade, and moisture that is used in the cultivation of this class of plants, the more liable they are to suffer from the effects of fumigation. When such plants as those above indicated are attacked by Aphides, they should be carefully but thoroughly washed with a fine syringe every three days, for a time, using clean water. This matter, however, will be considered more fully under the special heading—fumigation.

Green Fly (Aphis rosæ).—There is no plant that suffers more from the ravages of Aphides than the Rose, and, where they are grown by the acre, as is the case with those in the trade, it is a difficult matter to do anything with them, but on open exposed grounds of large extent, such as those who cultivate for sale usually have, they do not so often make their appearance as in the often confined and over-sheltered plot of the amateur. Here they are to be met with almost as certainly as the return of spring, and if they make their appearance whilst the leaves are not fully developed, and yet tender, the best means is a good syringing with Tobacco-water. Further on in the season, when the foliage becomes harder, syringing two or three times a week with clean water, or still better, the use of the garden engine will keep them clean; the insects are not able to withstand the continuous application of water, and here it can be used with good effect to the plants in other ways besides the destruction of the insects. Dahlias, Asters, and Verbenas are all plants on which they thrive apace, and, as a general rule, the better the plant suits them the more injury they do to it. These and other plants of similar character require the same treatment as Roses. Peaches and Nectarines are especially their favourites, and the trees are few that escape their attacks every spring, sometimes before, but often just as the trees go out of bloom. They may easily be detected by the leaves beginning to curl before they are half developed. A diligent look-out should be kept at this time, and not a day should be lost as soon as they are discovered in syringing well with Tobacco-water the parts affected. But this is not always effectual unless the trees are syringed with the Tobacco-water all over. This should be always done as soon as any insects are discovered, and one dressing of this description is sufficient, for as soon as the leaves get further developed they will stand the use of the garden engine, used with care regularly twice or thrice a week, which keeps in check those and other pests.

Quassia.—Take 4 oz. of Quassia chips, and boil them ten minutes in a gallon of soft water; strain off the chips and add 4 oz. of soft water, which should be dissolved in it as it cools. If the Rose trees are against a wall you may syringe them with this compound; but if they are standards, you must lay the shoots against a piece of slate or wood held in the left hand, and apply the liquid to leaf and stem with a moderate-sized painter's brush. Ten minutes or a quarter of an hour afterwards give the trees a good syringing with clear water.

Soda and Aloes.—The "Rural New Yorker" gives the following preparation as sure death to the Green Fly, as well as many other insects that infest house plants:—Dissolve 2 lbs. of washing soda and 1 oz. of Bitter Aloes, and when cold add one gallon of water. Dip the plants into this solution, and lay them on their sides for a short time, and the insects will drop off. Syringe the plants with clean, tepid water, and return them to the house. This mixture proves to be an effectual remedy for vermin on wall trees and hard-wooded plants of robust habit, but it injures soft-wooded plants and tender newly-grown shoots of all plants, especially Vines. It will be found best in all cases to use Barbadoes Aloes, which can be had in quantities at from 1s. 4d. to 1s. 8d. per lb. Cape Aloes may be obtained at 8d. per lb.; it is very inferior to the other, and no cheaper in the end.

Soft Soap and Tobacco.—Dissolve 8 lbs. of the best soft soap in 12 gallons of rain water, and when cold add a gallon of strong Tobacco liquor.

Sulphur and Snuff.—Mix 1 lb. of flowers of sulphur, 1 lb. of Scotch snuff, 1 lb. of quicklime, ½ lb. of lamp-black, 1 lb. of soft soap, with sufficient water to make them into the consistence of paint. Unnail the trees about February, before the bloom-buds begin to swell, and with a common paint-brush anoint every branch from the ground upwards. The application must be made every other, if not every year; but once in two years may be sufficient if thoroughly well done.

Tobacco.—Choose a still evening, and let the plants be quite dry. Place them close together, and in a close place thus obtained put either an iron pan or hard-burnt garden pot; put in it a few red-hot cinders that do not smoke, upon which put the Tobacco or Tobacco-paper; a cloud of smoke will soon arise. When the frame is well filled with smoke remove the pan, but be exceedingly careful that the Tobacco does not break out into a flame. One of the best remedies for Aphis that can be employed in a dry state is Tobacco Powder, which can be obtained at all nurseries and seed houses. The foliage should be damp when the powder is applied, and with the aid of the puff sold for the purpose, or a medium-sized dredge, the under side of the leaves, as well as the surface, must be well dusted. Soft-leaved plants, such as Calceolarias and Cinerarias, must be well syringed in about twenty-four hours after the application of the powder. A very effectual remedy in a liquid state is prepared by steeping shag Tobacco in hot water, at the rate of 4 oz. to the gallon. A little size should be added to ensure the solution adhering to the insects. Immerse the plants, if practicable, bottom upwards in the mixture, or if this cannot be done, thoroughly syringe them, but the first is the most economical method of using it. Shoots of Rose and fruit trees should be dipped separately in a vessel containing the liquid.

Tomato Leaves.—M. Siroy, writing in the "Journal of the Central Horticultural Society of France," says:—"Last winter a Peach tree of mine, which had made vigorous growth, fell off, and a couple of months ago was overrun by Aphides or plant lice, and the ants which always follow in their train. Having one day pruned some Tomatoes I placed the cut portions upon the Peach tree to protect it from the heat of the sun. The following day both lice and ants vanished, except upon the rolled-up leaves where the Tomatoes could not penetrate. I unrolled these as far as possible and placed fresh Tomato

leaves upon them, and from that moment the Peach tree has been perfectly free from insects and grows admirably. I followed up my experience by macerating Tomato leaves in water, with which I sprinkled my climbing Nasturtiums, Orange, and Rose trees. All these plants, which were infested with insects, were freed from them in two days. I almost regretted that the clean state of my Melons did not give me an opportunity of trying a similar experiment upon them. Here, then, is a valuable property of the Tomato discovered by the merest accident, for I have never read or heard of it before. Petunia leaves are said to have a similar effect, but in the trials I have made I only achieved partial success, and up to the present time Tobacco has been the only specific remedy. Tomato leaves are much more easily procured than the latter; they are always at hand, and many are wasted in all gardens which can thus be utilised." M. Van Hulle, of Brussels, states that they grow Nasturtiums in Belgian Apple orchards, and allow them to climb up the trees to keep off the American Blight.

Various.—Amongst miscellaneous remedies which have been tried with more or less success, may be mentioned strong brine, Gishurst Compound, 8 oz. to the gallon of water, and spirits of turpentine. In applying the last-mentioned remedy care should be taken to prevent its touching the young leaves or shoots.

The best and cheapest remedy for Aphides on Currant bushes is to cut off the curled ends of the shoots, and then wash the bushes vigorously with the garden engine. There is nothing like a stream of clean, cold water for dislodging insects and cleaning fruit trees of all kinds. If we had time to do this often enough, no insecticide would ever be required.

Black Fly on Cherry trees is generally got rid of by washing or syringing the parts affected with strong Tobacco-water, or gas liquor diluted with one-third water. The ends of the shoots attacked by the pest should be well washed and rubbed with the liquor. The Black Aphis is one of the worst of the family, and is much harder to kill than Green Fly. A second and even a third application of the remedy is generally necessary. The amateur who does not happen to have more than a few trees will find the soapy water from the laundry not a bad substitute for the gas liquor or Tobacco-water when used in the same way. Chrysanthemums—more especially such as are grown in pots—when out-of-doors in the summer, are very liable to the attacks of Aphides; dip the points of the shoots in Tobacco-water as soon as the insects are discovered, and afterwards syringe every evening with clean water. There is one species of this insect that attacks the roots of Lettuce in summer, frequently destroying the crop in a few days. There is no warning until the damage is too far done to be repaired. The first evidence of their presence is given by a few plants suddenly flagging in the sun. If the roots be examined, they are generally found swarming with the insects. When such is the case, nothing can be done to save the crop. As a preventive, from the middle of June to September, as soon as the plants get 2 in. high, give them a good dressing round the collar with soot, washing it well down to the roots; this generally will be found effective. With bush fruits, especially Currants, which often suffer severely from the ravages of these insects, where they are largely grown, the cost in labour would be too much; where the number of trees are small, if the insects be attacked as soon as they make their appearance, they may be destroyed with clean water from the garden-engine.

Asphalte Walks.

The so-called asphalte used for garden walks has nothing in common with true asphalte, used for the streets in London and Paris. The excellent walks in the metropolitan parks, on the Thames Embankment, in Leicester Square, &c., are made by Mr. Meston in the following manner:—The foundation is made in the usual way with 6 in. of brick rubbish, ballast, or rough gravel, over which is placed a layer of the prepared rough material 2 in. deep, this being well consolidated by a heavy roller; then a layer of the fine material, about 1½ in. in thickness, is evenly spread and well rolled, applying water to the roller to prevent sticking. It should then be sprinkled over with Derbyshire spar or fine beach shingle. Either of these improves the colour and keeps the dark compound of which the walk is made from being seen. The materials are prepared in the following manner:—A strong fire is made of coal and wood, over which is placed a layer of gravel, out of which the fine part has been roughly sifted. Then a layer of coke breeze is laid over the gravel, and when the fire has got through the gravel, another layer of gravel is placed over the breeze, and so on until the quantity required has been burnt. While in a hot condition the material is passed through sieves of different sizes to get rid of the fine dust and separate the material into two sizes, coarse and fine. A flooring of planks is laid near the heap on which the sifted material is placed and mixed with coal-tar in the proportion of 36 gallons to a yard of material. The rough and fine are laid in separate heaps and used as required.

The place intended to be asphalted must be previously levelled, then put on it a coat of tar, and sift some road-sand or coal-ashes all over it very thickly; after this is dry repeat the operation until you have got four coats of tar, and as many of coal-ashes or road-sand. You will then have an excellent, clean, dry, hard path. It will make excellent walks, or floors for sheds, out-buildings, &c., and will wear for many years.

Take eighteen parts of mineral pitch, and eighteen parts of resin, put them into an iron pot, and place it over a fire, keep boiling a short time; then add to it sixty parts of coarse sand, mix it well together, and lay it on the path to the thickness of 1 in.; then sift a little fine gravel over it, and beat it in before the asphalte sets. This is a more durable asphalte than the former, though it is much more expensive and more troublesome to form.

Another good asphalte may be made with one part mineral pitch, one part resin, seven parts chalk, and two parts coarse sand. Boil them together, and lay it on in a hot state, adding a little gravel, as in the preceding case.

Procure a quantity of road-sand, or similar powdery material, and let it be thoroughly dried, then sift out of cinder-ashes the finer parts, and let that too be made thoroughly dry. Mix these materials carefully, in the proportion of two parts of road-sand to one of cinder siftings. Next provide an iron cauldron, in which coal-tar can be made boiling hot. In a dry place, on a dry day, spread a quantity of the sand and cinder siftings on the ground, as a bricklayer spreads his lime, making it hollow in the middle, and into that pour the hot tar; then incorporate the whole as in the operation of making mortar, and when a stiff paste has thus been formed, spread it over the ground on which the walk is to be constructed, the ground being previously levelled and beaten as firm as possible. Spread the mortar 3 in. or 4 in. in thickness, then powder it over with dry sand, after which a few passes of the roller will press it level, and the work is finished.

Take two parts of very dry lime-rubbish, and one part coal ashes, also very dry, and both sifted fine. In a dry place, on a dry day, mix them, and leave a hole in the middle of the heap, as bricklayers do when making mortar. Into this pour boiling hot coal-tar; mix, and when as stiff as mortar, put it 3 in. thick where the walk is to be; the ground should be dry, and beaten smooth; sprinkle over it coarse sand. When cold, pass a light roller over it: in a few days the walk will be solid and waterproof.

Asphalte covering, to harden.—This must be done in summer; on a hot day, give a coat of coal-tar; this will dry in a few days; then boil tallow, pitch, and the tar together, in the proportion of one part tallow, three of pitch, and four of tar. Put this on on a hot day, and, if properly done, roofs or paths will require no further care for years. Ten feet square may be tarred with a sweeping brush in ten minutes.

C. W. Quin.

The Colorado Potato Beetle.—You have alluded two or three times to this Beetle. No one who has not seen its ravages can form any idea of the destruction which it commits. A grower may look over his Potatoes, see a few little specks of insects in the hearts of the leaves and take no notice of them; let him go again in six or seven days and he will have nothing but a few bare stems of his Potatoes left. As for hand-picking, I commenced picking off the beetle early in the spring—one day I picked two quarts off 60 square yards. When I got through my work I went to where I began, and there they were as thick as ever. The only sure remedy is Paris Green. It is easily applied, but one must be careful in using it. I sincerely hope this pest may not reach England.—W. Barkham, *Hohokus, New Jersey, U.S.*

TREES AND SHRUBS.

THE SHRUBBY CINQUEFOILS (POTENTILLAS).

The shrubby Cinquefoils form very neat, free-flowering, deciduous, dwarf, round bushes, from 2 ft. to 4 ft. high, which bloom during the summer and autumn months; they grow well in any good garden soil that is rather dry, and are well suited for planting on rockwork, or in the front of shrubberies, as they never intrude on their neighbours, and retain at all times their neat, dwarf, close habit of growth.

1. The Shrubby Cinquefoil (Potentilla fruticosa, *L.*).—This is a free-growing, deciduous shrub, 4 ft. high, which produces its rather large yellow flowers from June to October. It is a native of England, Germany, and the Pyrenees in mountainous thickets. The leaves are pinnately cut and smooth above, but, when young, beset with incumbent hairs and canescent; the lobes are oblong, lanceolate, entire, close together, and nearly the same colour on both surfaces; the flowers are somewhat large, sub-corymbose, terminal, and yellow. It is useful for planting in the front of shrubberies, and grows freely in any good garden soil that is rather dry.

2. The Cluster-flowered Cinquefoil (Potentilla floribunda, *Pursh*).—This kind forms a very neat, slender, free-flowering shrub, about 2 ft. high. Native of North America, throughout Canada, from Lake Huron to the plains of the Saskatchawan and Bear Lake, in bog meadows and on the borders of lake rivers. It produces its flowers from June to October. The leaves are pinnate and pilose, with the upper ones ternate and stalkless; the lobes or leaflets are lanceolate, narrow, quite entire, and with a slight hoary silkiness; the flowers are rather small, yellow, and produced abundantly in close clusters at the ends of the shoots. It is a very pretty little shrub, well suited for planting on rockwork.

Synonyms—P. tenuiloba, and P. tenuifolia.

The Potentilla parvifolia, *Fischer*, found in Songaria, is a smaller-leaved variety of P. floribunda.

3. The Smooth Cinquefoil (Potentilla glabra, *Loddiges*).—This is a very pretty, small, dense shrub, about 2 ft. high. Native of Siberia, on the Dahurian Mountains, and produces its showy white flowers from June to August. It is smooth in all its parts when matured, but a little downy on the young shoots, and with the lower branches horizontal and the upper ones erect; the leaves are pinnate, with an odd one, undulated, and deep glossy green on the upper surface; the leaflets are in fives, oblong, quite entire, united at the base, smooth and revolute on the margins; the flowers are white, in terminal, corymbose panicles, and rather large; the sepals are united in one and hairy. This is a beautiful little shrub, well suited for planting on rockwork.

Synonyms—P. dahurica and P. fruticosa alba.

George Gordon.

FOREST TREES AND UNDERWOOD.

Mr. Berry says (see p. 23).—"Any branches of trees that overhang roads and require foreshortening should have that operation performed, care being taken to leave sufficient foliage to keep the branch alive, and, if possible, sufficient to hide the mark occasioned by pruning; this may generally be effected by cutting off the branch close in front of twiggy spray. Live branches should in no case be cut off close to the stem; but on the other hand, dead branches should be neatly sawn off close to the bole, and the wound tarred over, which will prevent Moss and Fungus growth, and in time the bark will grow over it." Now, are we to understand by this that pruning simply means "foreshortening" branches that may be in the way till such time as they become (limbs) and die, and that then they are to be neatly sawn off close to the bole? We are told that live branches should in *no case* be cut off close to the stem. If this be the art of pruning forest trees, I am afraid that if adopted posterity will not reap much benefit from it. Mr. Berry's experience is quite different from mine. I have always found that by cutting the live branch off close to the stem at once, when necessary, to form a pole, and to equalise the growth of the tree, that the wound caused by pruning was overgrown with bark in a shorter time than it takes to grow over the wound of a dead branch. In the case of many dead branches, instead of the bark growing over the wound the remains of the branch rot right into the trunk of the tree, leaving in its decay a hole which is constantly filled with water in wet weather, and in course of time this rots the trunk from the place affected down to the ground, and the tree becomes useless as timber. It is the regular practice in many places for the foresters to go through the young plantations at this season and prune all the trees that require it cutting lateral branches off close to the stem when necessary, and shortening others to equalise the growth. To cover the wound of a dead branch (cut close to the stem) with tar, does not seem to me at all a ready mode of promoting the growth of bark over it.

Cardiff Castle. A. Petigrew.

The Ling or Heather (Calluna vulgaris) re-discovered in Massachusetts.—The now well-known patch of Calluna in Tewkesbury, which was discovered by Mr. Jackson Dawson nine or ten years ago, was then the only one known in the United States, or, indeed, on the Continent. Up to this time the only contradiction to the current aphorism, "There are no Heaths in America," came from Newfoundland, where Calluna was known to occur, although few botanists had ever seen specimens of it. It required some hardihood, as well as a clear conception of the causes which have ruled over the actual distribution of our species in former times, to pronounce that this Tewkesbury patch of Heath was indigenous. The discoveries soon afterwards in Nova Scotia and Cape Breton still left a wide hiatus. This was partially bridged over by the detection, by Mr. Pickard, a Scotch gardener, of a similar very restricted station in Maine, on Cape Elizabeth, near Portland. We have now the satisfaction of recording a second station in Massachusetts, not far from the former one. Mr. James Mitchell, of Andover, is the present discoverer, and the station is in the western part of Andover, half-a-mile north-east of Haggett's Pond, and five miles north of the Tewkesbury station. Mr. Mitchell accidentally met with this patch last summer when berrying, and, being a Scotchman, recognised it, took home a sprig of it, and, at a subsequent visit, grubbed up one or two small plants, which a neighbour still has in cultivation. A fresh branch taken by him from the wild plants this summer is now before me. It proves to be of the green and smoothish variety of Calluna, precisely like the Tewkesbury plant. Small as the new patch is said to be, it will serve to confirm the opinion long ago expressed, for a second station greatly diminishes the very small chance of its having been casually or in any way introduced through human agency. It should also be noted that this station, as I am informed by the Rev. Mr. Wright, is near an extensive glacial maraine which traverses that district, and which he has traced for a great distance northward.—Asa Gray.

Select Lime Trees.—We observe in your "Notes of the Week,' a paragraph on the "Lime Tree in London Parks," remarking on the early fall of the leaf, and concluding with the observation that "The Lime is the least suitable of all trees for towns." We enclose leaves of a Lime which Mr. J. Barron picked up on the Continent some years ago, and which we now cultivate largely, viz., Tilia dasystyla. As you will observe, the leaf is a much darker and softer green than that of the common variety, and the tree posesses this valuable property, that it retains its leaves for many weeks after the other varieties of Limes are destitute of foliage. Tilia argentea, leaves of which we also enclose, retains its foliage in good condition much longer than most other varieties. The specimens sent of Tilia platyphylla and Tilia parvifolia, the two varieties most generally planted, are quite brown and shrivelled: they were taken from trees growing side by side, with those from which the leaves of Tilia dasystyla and argentea were plucked, the foliage on the latter being as green and fresh as if it were May instead of August. We trust in your sweeping condemnation of Lime trees, you will except these two varieties; for with the exception of the too early shedding of the leaf, the Lime tree is one of the most suitable trees for town planting, as its habit is better than that of most other deciduous trees, and it thrives well in a smoky atmosphere, where many others merely exist, or fail altogether. The different varieties of American Lime seem to stand the drought better than the common. We send you a leaf of Tilia americana macrophylla, which does not appear to have suffered much yet, and we have left plenty of larger leaves on the same tree. We are surprised that the finer varieties of deciduous trees are not better known and sought after than they are. We are at least a generation behind our continental neighbours in this respect.—Wm. Barron & Son, *Elvaston Nurseries, Borrowash.*

The Golden Poplar.—This is a beautiful yellow-foliaged Poplar, which, when introduced amongst trees of a dark green colour, will prove strikingly effective. It also contrasts well with the new purple Birch and other trees of that kind.—A Forester.

An Extensive Arboretum.—Mr. Meehan, editor of the "American Gardeners' Monthly," prepared for the Centennial Exhibition at Philadelphia, an uncommonly complete collection of trees and shrubs, comprising about 750 varieties, all hardy through the larger part of the United States, and all plainly labelled. He announces by circular his intention of parting with this Arboretum at the close of the exhibition, in the hope that it may be obtained for some public institution or other extensive grounds, either in America or in Europe, where it could be set out to advantage and remain permanently undisturbed.

THE FRUIT CROPS.

SCOTLAND.

Roxburghshire. — Floors Castle, Kelso.—Fruit on the whole is scarce here this year, and with few exceptions not at all good. Strawberries have been an uncommonly good and heavy crop. Plums are a large crop, and likely to be very good. Apples are far below the average, and small, but the trees are healthy and promise well for another year. Apricots are an average crop on most trees, but will be small, owing to the dry weather; with the recent rains, late kinds will swell and will be likely to be better in quality than the early Breda kind, which is very small. I don't remember a more disappointing year, as regards fruit, than this has been. Its early months were extremely promising, but late in May and early in June, the weather was more changeable than was ever before experienced, withering and blighting both leaves and fruit. The flowers set well enough, but dropped very young—Even Gooseberries which have never been a failing crop for eight years past, are nearly a complete failure this season. Morello Cherries on a north wall are an average crop, but a failure on an east aspect. The cause of this difference must doubtless be attributed to the lateness of the opening of the flowers on the north compared with those on the east wall. Pears are a medium crop, and the quality may be good after the rains which we have had. Our Pears are all on walls, and were protected with fish nets, like the Apricots and Plums. This way of protecting blossom is not excelled by any other kind of covering.—H. Knight.

Dumfriesshire.—Drumlanrig, Thornhill.—Our spring here was, as far as weather was concerned, a continuation of winter up to the end of May; consequently all hardy fruits had the worst possible chance. With the exception of Red and White Currants and Raspberries, which are a fair average crop, bush fruits are a poor crop. Gooseberries, Black Currants, &c., are a very light crop; Black Currants were unusually heavy last season, and this may have some share in the deficiency this year. Apples, which were a heavy crop last year, are very light this season, but I notice that one or two trees that missed a crop last season have a fair crop this. I think we are too ready to throw all the blame on the weather, while the effects of a too heavy crop the previous year are not sufficiently taken into account. If a regular system of thinning the fruit were carried out there would be a better chance of regular crops. Plums and Pears are all but *nil*, but our trees are in a transition state, and this situation scarcely affords a fair criterion as regards the more favoured parts of this district. This place lies in a valley surrounded by a range of high hills on all sides but the south, and is peculiarly subject to late frosts. The Apples that bear most constantly are Lord Suffield, Stirling Castle, Blenheim Pippin, Catshead, New Hawthornden, Croftawry (a grand Apple), Alfriston, King of the Pippins, and of course Keswick Codlin. So far as my observation has extended, the Apple, Plum, and Pear crops are very light all over the south-west of Scotland.—D. Thomson.

Midlothian.—Dalkeith Park.—The fruit crop here is fully an average one and excellent in quality, but in the district generally it is under an average, having been much injured by cold and wet in autumn, and the severe frosts which we experienced late in the spring. On our light soil all kinds of small fruits have been very abundant, Strawberries especially being much better than usual, as we had sufficient rain to keep them growing and healthy till the crop was gathered. Garibaldi (Vicomtesse Hericart de Thury) is by far the best sort in this locality, but on heavy soils, larger sorts are profitably grown. Pears and Apples are a good crop, and the fruit is clean, and promises to be larger and better in quality than usual. On walls, the best-bearing Pears are—Marie Louise, Williams' Bon Chrétien, Louise Bonne of Jersey, Beurré Diel, Beurré Rance, Napoleon, Brown Beurré, and Glou Morceau. On standards—Hessle, Williams' Bon-Chrétien, Beurré Hardy, Flemish Beauty, Beurré Diel, Beurré Superfin, Seckle, and Beurré de Capiaumont. The best bearing Apples are—Lord Suffield, Hawthornden, Keswick Codlin, Ecklinville, Stirling Castle, Cellini, Margil, Oslin, Reinette du Canada, Warner's King, Tower of Glamis, and Yorkshire Greening. Plums and Cherries are a fair crop in some places; but, generally, they are thin. Morello Cherries are a fine crop. Apricots are very thin. Peaches and Nectarines on walls are almost a total failure; the wood having ripened badly last autumn, and severe frost in the middle of April destroyed any fruit that had set, even although well protected. Since the end of May the weather has been very favourable to the growth of fruit, and the trees have made a clean, healthy growth, which will bring the crop finely to maturity, and promises for the next year's crop.—M. Dunn.

East Lothian, Tynningham, Prestonkirk.—Crops of small fruits have been heavy hereabouts. Gooseberries perhaps not so good as other fruits, except those on north borders and walls, which are extra fine. Black and Red Currants are excellent. Strawberries very large crops; Vicomtesse Hericart de Thury, and a kind sent for "Dr. Hogg," have done best. Apricots are moderate. Pears a fair crop. The kinds which appear most suitable for this district are—Winter Nelis, Bon Chrétien, Marie Louise, Glou Morceau, Crassane, Napoleon, Hacon's Incomparable, and Beurré d'Amanlis. The following bear well, but do not ripen: Beurré Diel, Beurré Rance, Easter Beurré, Van Mons Léon le Clerc, Triomphe de Jodoigne, and Duchesse d'Angoulême. Apples are only a moderate crop generally—Cellini, Wellington, Ecklinville, Lord Suffield, Reinette du Canada, and Leadington may be noted as the best for kitchen purposes; and Ribston Pippin, Thorle Pippin, King of Pippins, Blenheim Orange, Dutch Mignonne, and Stone Pippin for dessert. Plums are on the whole deficient—Victoria, Black Perdrigon, White Magnum Bonum, Green Gages, Kirke's and Jefferson being the best kinds. Cherries are mostly in an unhealthy state, Morellos succeeding best; of these there is a fair crop. Of indoor fruit crops, Early Peaches have been fine in this locality, whilst the late crops are poor. Grapes are doing well.—R. P. Brotherton.

Renfrewshire.—Blythswood.—Fruit crops in this neighbourhood are, on the whole, under the average. Apricots, Peaches, and Nectarines outside are very thin. Plums, with the exception of Victoria, middling. Cherries are also thin. Pears are an average crop on standards, but thin on walls. Apples are good in some parts of this district, in others very scarce; here Brabant Bellefleur, Lord Suffield, and Stirling Castle are the best. All small fruits with us have been plentiful, but in some cases Gooseberries and Currants are thin; the thermometer on successive nights, when these were in full flower, fell to 5° and 7° below the freezing point. Raspberries are particularly fine this season. All sorts of vegetables are good, not having suffered from want of rain, which up to the end of July amounted to nearly 24 in.—John Methven.

Ayrshire.—Culzean, Maybole.—Fruit crops here this season are by no means plentiful, although Currants, Strawberries, Gooseberries, and other small fruits have been about an average. Some kinds of Apples are bearing well, and the same may be said of Plums. Pears are quite a failure, especially on walls. The following are the names of a few varieties worth noting, and which do well hereabouts:—Of Plums the best are the Victoria, Kirke's, and Jefferson. Pears—Williams' Bon Chrétien, Beurré Diel, and Ne Plus Meuris. Apples—Ecklinville, Lord Suffield, King of Pippins, Manks Codlin, Keswick Codlin, Royal Russet, and the Wormsley Pippin. The last-named variety appears to bear in abundance, even when the season is unfavourable for other sorts.—David Murray.

Perthshire.—Tullyallan Castle, Kincardine-on-Forth.—Apricots here are a moderate crop. Plums fair. Cherries abundant and fine. Peaches and Nectarines good under glass. Apples irregular crop. Pears average. Small fruits abundant, especially Strawberries, which are very plentiful. Hazel Nuts plentiful.—Michael Gibson.

Forfarshire.—Glamis Castle.—Here and in the neighbourhood fruit crops are scarcely up to the average. Blossoms of all kinds made a fine show, but the repeated late frosts which we had committed sad havoc. Unprotected Apricots and Peaches are almost *nil*. Cherries, with the exception of Morellos, are a light crop. Strawberries promised to be a heavy crop, but the hot, dry summer prevented their swelling to any great size, although here the rule is a full crop of very fine Strawberries; our principal kinds are Sir Joseph Paxton, Glengarry, Keen's Seedling, Elton Pine, Eclipse, and Vicomtesse Hericart de Thury. Apples are under average, with the exception of Lord Suffield, and all the varieties of Codlins—King of the Pippins, Kerry Pippin, Ecklinville, Dumelow's Seedling, and Stirling Castle are also bearing fair crops. Pears are very scarce, our best being Louise Bonne of Jersey, Marie Louise, Vicar of Winkfield, and Williams' Bon Chrétien. Plums, which scarcely ever fail here, are this season under average, with the exception of a few kinds, including Victoria, Prince of Wales, Jefferson, Orleans, and Magnum Bonum, which are good. Gooseberries, Currants, and Red and White Raspberries are a fair average crop.—G. Johnston.

IRELAND.

Dublin.—Viceregal Gardens.—Fruit prospects in the early part of the season were very promising here, blossoms being strong and plentiful. In the first week of April Apricots were thickly set with fruit as large as Kidney Beans; Peaches on walls under cover were just setting, and Pears and Plums were literally loaded with blossom. A thunder-storm, accompanied with showers of hail, ushered in the second week; and then came a series of nights of snow and

frost alternately, which completely killed our Apricots, Peaches, Pears, Plums, and Cherries. A few late blossoms which set on the Pears constitute our entire crop. Indoor Peaches are particularly good this season. Currants of different sorts are a heavy crop. Gooseberries a good average crop. Strawberries good, but somewhat affected by the drought. Apples are under an average.—G. Smith.

Meath.—Headfort House, Kells.—Of Apples we have good crops; Pears an average crop; Apricots, Peaches, and Nectarines under the average; Plums average; Cherries above the average, and very good; Figs, good; Currants, small; Strawberries abundant and good; Raspberries small and under the average, as are also Gooseberries and Nuts. I find that President, Eclipse, and Wizard of the North are our best Strawberries this year.—J. Clews.

Sligo.—Markree Castle, Collooney.—Fruit crops, upon the whole, are not good in this district. Pears, Apricots, Cherries, and Gooseberries are almost a total failure, and Strawberries have been generally poor this year. Apples, Plums, Raspberries, Currants of all kinds are pretty good, and we have an extra good promise of Peaches. The varieties of the different fruits which do best in this neighbourhood are, amongst Apples—Cox's Orange Pippin, Golden Pippin, King of the Pippins, Keswick Codlin, Yorkshire Greening, and Northern Greening; amongst Pears—Beurré Giffard, Beurré d'Amanlis, Williams' Bon Chrétien, Glou Morceau, Zéphirin Grégoire, and Knight's Monarch; amongst Plums—Kirke's and Victoria are two of the best; of Peaches, Royal George and Noblesse are favourites here; amongst Cherries we consider May Duke, Kentish, and the Morello the most useful.—Frederick Bottomer.

Munster.—Castle Martyr.—Pears, Apples, and Plums in orchards are a complete failure in this neighbourhood. I notice, however, a fair sprinkling of Damsons; Pears on walls are only a moderate crop; amongst those that succeed best are Marie Louise, Louise Bonne of Jersey, Glou Morceau, Autumn Bergamot, Passe Colmar, Beurré d'Aremberg, Beurré Diel, Gansel's Bergamot, Williams' Bon Chrétien, Joséphine de Malines, and a few others. Plums are an average crop. Peaches and Nectarines quite a failure, except where protected with glass or canvas during the cutting winds and frost which we experienced this spring. Of bush fruit there is a very fair crop; Red Currants and Raspberries suffered most. Strawberries were a heavy crop, and the fruit was very fine in quality, President, Yates Seedling, Dr. Hogg, and Sir Joseph Paxton are grown here; the two former do best. Fruit trees are now making good growths and appear to be much cleaner than I have seen them for years. I had nearly forgotten to say that there is an average crop of Morello Cherries on walls; those on standards are a failure. —B.

WALES.

Swansea.—Penllergare.—Fruit crops in this garden and neighbourhood are below the average. Of Apples we have none. Of Pears the best crops are upon pyramids, consisting of Pius IX., Bergamotte d'Esperen, Beurré d'Hamacher, Belle de Noel, and Beurré d'Aremberg; upon walls the only trees that have any crops upon them are Beurré d'Aremberg and Beurré de Capiaumont; on espaliers Louise Bonne of Jersey and Napoleon are the only trees that have any crops upon them. Strawberries, Currants, and Raspberries are average crops. Black Currants and Gooseberries far below the average. Of Peaches and Nectarines we have very few, and of Cherries none. The strong east winds and spring frosts destroyed most of the blooms.—John Nunns.

AMERICA.

As our markets are now largely supplied with American Apples, some information as to the crop there may not be without interest. The June report of the Department of Agriculture has the following in regard to the prospects of the fruit crop throughout the country: —The Apple crop of the New England States is generally above average. In the Middle States the bloom was abundant. The Apples are above average and Peaches below, the Peach regions of Delaware reporting a very depressed prospect. Of the South Atlantic States, Maryland promises a full crop of Apples, and at least half a crop of Peaches. In Virginia both these fruits are less prosperous. A cold spring and hard frosts following a mild winter in several counties cut down a previously fine prospect. Apples are less than an average, and Peaches one-third. South Carolina complains of extensive injuries by frost. The frost extended to South Carolina and Georgia, though fair crops are expected on high lands. A warm winter succeeded by cold in spring caused great destruction in some localities. These States promise about three-fourths of a crop of Apples, and less than half a crop of Peaches. The Gulf States are still more chary of promise as regards these two crops, but in the tropical and semi-tropical parts of Florida there is fair promise. The inland Southern States indicate about eight-tenths of an average crop of Apples, but not over one fourth of a crop of Peaches. Here untimely frosts did their work with greater effect in many sections from the warmth of the winter. The States north of the Ohio will, on the whole, probably turn out a full crop of Apples, the deficiency in Illinois and Indiana being more than made good by the large surplus in Michigan and Wisconsin. Ohio is above average. Injuries from frost seem to have been more local in their character in this region, though several counties complain of them as severe. Michigan will have a full Peach crop, but the others not half an average. Of the States west of the Mississippi River, the northern portions promise a surplus crop of Apples, while Missouri and Kansas drop below the average. Iowa will have an unusual crop of Peaches, while Missouri and Kansas will be about half an average. Untimely frosts are noted in the southern sections, together with local hail-storms. On the Pacific coast, California promises a full crop of Apples and a surplus of Peaches; Oregon a full crop of Apples, but not quite a full crop of Peaches.

Driving away Bullfinches.—Living, as we do in the midst of a wood, and the Hawthorn berries having been very abundant last winter, we were much concerned at the ravages made by the Bullfinches on the buds of our Gooseberry bushes and Plum trees. A copious watering with a strong solution of Gishurst Compound and a good powdering with Pooley's Tobacco Powder, with Macfarlane's Patent Glasgow Powder Distributor, before they became dry, soon put these troublesome birds to flight. At the proper season the trees were one mass of bloom, and in the case of the Gooseberries no caterpillars were to be seen on the bushes during the whole season. —J. Rose, *St. George's Hill, Byfleet, Surrey.*

Rose Wine.—I have been reading an interesting article in The Garden of May last on "Rose Lore," and I was about to write and tell you that you had omitted three things for which Roses are adapted, viz., Pot pourri, Conserve of Roses, and last, but best of all, Rose wine. Of the latter, when my brother and I were youngsters, we found a few bottles in my father's cellar about the year 1836, made by the first Mrs. James Lee at the end of the last century, and which must have been at least forty years in bottle, and then it was a delicious and sound wine, with a rich Rose aroma. I have often thought of trying my hand at making a small quantity of Rose wine, and it happens that this year I have made the attempt, and, as I managed to tun twenty-eight gallons on Saturday last that had been well fermented for twenty-four days, and stopped before that pernicious acetous fermentation had commenced, I have every reason to believe that my attempt will be a success. I put 3 lbs. of Rose leaves (mixed) and 3 lbs. of loaf sugar to one gallon of water, and mashed them well for five days, stirring daily, adding 1 lb. of cream of tartar to the fifty gallons. No fermentation in this state being apparent, I squeezed the liquor from the leaves into a cask, where it fermented for twenty-four days. On Saturday last I racked the whole into a brandy cask through an India-rubber tube acting as a syphon, one end inserted to the bottom of the full cask which was on a stand, and the other end dropped into the other cask which lay on the ground. I then added ¼ oz. of isinglass dissolved in water, and shook the whole violently. To-day being the third day, I removed the vent peg to allow the gas, which was very slight, to escape, showing that fermentation had not recommenced. In order to check the fermentation which had not quite ceased in the first cask, I sulphured the second cask. This is done by thrusting in two or three lighted matches which had previously been dipped in sulphur. During fermentation in the first cask, care must be taken to completely fill up the cask daily—the bung-hole being left open for the purpose, for which an extra gallon of liquor must be made. In racking off the tube is useful, as it prevents the contact of the wine with the atmosphere, as this conduces to a renewal of fermentation, which it might be difficult to check a second time, especially in such a tropical summer as that through which we are passing. Although I gathered any Roses I could get, I avoided such kinds as Baroness Rothschild, which has not a particle of scent, and I fixed upon two varieties which produce the greatest amount of substantial petals and the finest aroma; these were Edward Morren and John Hopper. The petals are lifted lightly between the fingers, leaving the calyx undisturbed, when they are a day past their best.—Charles Lee, *Hammersmith.*

South Sea Oranges.—The number of Oranges brought to San Francisco from Tahiti since January 1, 1876, is 4,173,000.

SCHOOL GARDENS IN AUSTRIA.

The German word "Kindergarten," as well as the method of instructing quite young children associated with it, is already tolerably familiar in this country. Briefly it is an institution to assist in and complete the bringing up of children, who are yet too young (three to six years of age) for regular school duties. True, it may include among its devices a small garden to promote observation and industry in its infant wards; but the school garden, as understood in Austria, is a real garden attached to the school, and forming part of the school. An article on this subject by E. Schwab, entitled "Der gegenwärtige Stand der Sache des Schulgartens," has recently appeared in the "Neue Freie Press," and is translated in the "Gardeners' Chronicle." In this article the writer, who it would seem is an enthusiastic promoter of this scheme for imparting practical instruction, gives us his ideas on the uses and scope of the school garden. This is an institution of Austrian origin, and it is rapidly extending from country to country of that large empire. Thus in a small district of Silesia 245 schools have gardens attached, thirty-six of which are worthy of notice, and of recent date. Many of the older ones are undergoing judicious remodelling, and six new ones are in the course of foundation. Moravia and Bohemia are active in the movement, and Galicia already possesses a considerable number in some of the provinces. In a few years the provinces of Mielec and Jaroslav will be dotted all over with school gardens, each one including a neat little ornamental garden. In Steyermark, again, a great many have been formed, and no fewer than forty-two through the exertions of the Agricultural Society. In the capital little has yet been done in the matter, but last year the Common Council resolved that they should be established wherever the requisite space can be obtained. Seeds are supplied from the national botanic gardens, and a worthy gentleman, Max Machanak, furnishes beautifully executed and suitable plans to any parish wishing to introduce the system, out of pure philanthropy. The writer deprecates the plan of making simply useful gardens, and would have them include recreation grounds as well as ornamental features. In fact, with due regard to economy, the garden should be laid out with discernment and taste, in order to instil into the minds of the young scholars a sense of the beautiful. If instituted simply for the purpose of inculcating early habits of industry, it would doubtless prove a failure. Of course the design and arrangements should always be made subordinate to local conditions and circumstances. Thus in a large town the requirements and the space generally available are usually widely diverse from those obtaining in a small country town. Again the class of school and the sex of the scholars have to be taken into account, as well as the resources of the establishment in question. The scheme is practicable in all national schools, schools for training teachers, orphan asylums, educational institutions for deaf mutes, weak-minded persons, &c. In all cases the natural capabilities—as extent, situation, shape of the ground, and quality of the soil, must be carefully studied. In short, no uniform plan can be carried out, for the conditions of a fertile plain are widely diverse from those of a barren mountain valley, and the same may be said of different altitudes. But even under the most unfavourable circumstances, the indigenous vegetation of the district should be illustrated, as well as the cultivated cereals, Vetches, fodder plants, aromatic and medicinal herbs, vegetables and herbs employed in cookery, and fruit of all kinds. The poisonous plants, particularly of the neighbourhood, should be cultivated in order to make them familiar to the scholars, and any plants peculiar to the region, such as Alpine plants in the Alps, and so on. Ornamental shrubs and herbaceous plants also deserve attention where there is room for them, and in larger gardens representatives of the native forest trees should be placed for shade on the play-ground and gymnasium. Where there is water, if only an ordinary spring, the school garden may be made a place of charming beauty; and thus formed, according to the space at command, it offers children the facilities for observation, and is a rich source of pure delight. Moreover, the knowledge gained by children in this practical manner—and in a well-conducted garden it is varied and valuable—is permanent; they may forget what they learn, but not what they experience. This, and much more, the writer says in favour of the school garden. One of the principal advantages of this system, besides affording pure and healthy occupation and pleasure, is, that under proper tuition, it induces habits of observation and independent thought. Again, in towns it keeps children both from the evil influences of the streets, or those more inclined for study from shutting themselves up too closely instead of taking healthy exercise. Qualified teachers speak very highly of the aid afforded in general education by the school garden, as well as of its elevating influences on the minds of the children. But it should be remembered that the school garden is not an entirely new idea. For more than a hundred years energetic schoolmasters have been trying to carry out the idea, but, simple as it is, they have not got beyond theory, having stuck fast in their search for a model which should be of universal application. In 1871 Sweden, with its 7528 free schools or national schools, possessed 2000 school gardens; but these were all in country places, and only kept up for certain practical purposes. At the Universal Exhibition of Vienna, Austria gave her contemporaries an example of a moderately large country school garden, actually laid out and planted, showing how easily, and at a proportionately small cost, a school garden may be carried out. Where a garden is absolutely impossible, as in some towns, growing plants in pots in the yards and windows is recommended.

CONSERVATORIES AND THEIR CONTENTS.

The heat that has prevailed of late has necessitated an increased quantity of air being given to keep down the temperature of these structures to as low a limit as possible, and the effect of this is, that the borders in which creepers and other plants are growing have been robbed of their moisture. This may not be apparent if only an examination of the surface be made, as that frequently misleads from the constant damping which it undergoes in order to keep the air of the house sufficiently humid. It should be borne in mind that the demand made on the roots of plants at such a time is at least twice as great as it is when the weather is still and cool, or the sky dull and overcast. With the air in constant motion, as it necessarily is when all the means of ventilation possible have to be made use of, evaporation goes on at an extremely rapid rate through the pores of the leaves, and the whole of this, as a matter of course, is taken out of the borders, but much deeper than can again be made good by mere surface-waterings; they should have a thorough soaking by going over them two or three times, leaving an interval of a day or so between each application, by which means the dry soil beneath will have time to swell and fill up the interstices, thus intercepting the water in its rapid passage through to the drainage without wetting the whole, an occurrence that frequently takes place when borders get into a dry, shrunken state. Among choice climbers Lapagerias, both red and white, are fast coming into bloom, and will be most attractive for some two or three months to come. They delight in having plenty of moisture at the roots and a rough porous peaty soil to grow in. With this resting on a well-drained bottom, water may now be given them at least once a week till they have completed their growth and ceased flowering, when less frequent applications will suffice. Where an increase of stock is desired, layering is the most expeditious way of obtaining it, an operation that may be carried out as successfully now as at any other season. Select a strong healthy shoot for this purpose, and remove the soil to a depth of 3 in. or 4 in., so as to form a channel in which to lay and peg down the branch, after which just bury it with sand and then cover up with rough lumps of peat and loam. If this be kept constantly moist, roots will be emitted within a year or so, when the layer may be severed and removed. Passifloras, Cobœas, Tacsonias, and other quick-growing climbers of a similar character should be kept regularly thinned out, so as to admit plenty of light and air to the plants beneath them. Most of the Tacsonias are subject to white scale, which, if not kept down now, will soon spread over the leaves and entail much future labour in clearing the plants from it. It first makes its appearance on the main stems and branches, from which it is easily dislodged by using any of the insecticides, which should be put on with a tolerably stiff brush. The utmost watchfulness must now be exercised in regard to Camellias, in order to see that they do not at any time suffer from want of water at the root, as when that happens the buds receive such a check as to cause them to fall off in the autumn just at the time when they should begin their final swelling. Weak liquid manure may now be given occasionally, especially to such as are confined to small pots, or have but a limited quantity of soil in which to grow. Clarified soot-water is perhaps the safest and best of all stimulants for Camellias; it imparts a rich dark hue to their foliage. Those that make a satisfactory growth invariably show more flower-buds than they are capable of carrying, and these should therefore now be thinned out, leaving such as are largest and best separated. As a rule, one to a shoot is sufficient; but this greatly depends on the condition the plants are in, the extent of feeding ground allotted to them, and other circumstances of a similar character. Choice stove plants that have been made use of to render conservatories gay, should not be allowed to remain out of heat too long, or to stand in a draught, as when that is the case they are sure to suffer injury, although they may not show it at once. Allamandas, Stephanotis, Clerodendron Balfourianum, Bougainvilleas, and Dracænas may be allowed to remain for some time to come, as a conservatory temperature just suits them at this season, and enables them to remain in bloom much longer than they would do in the close, moist heat of a stove.—J. Sheppard, *Woolverstone Park.*

NEW PLANTS, &c.

Bongardia Rauwolfi.—This is a very distinct, herbaceous berberidaceous plant from Western Asia; it has large, tuberous, underground stems, pinnate leaves, and nodding scapes of yellow Buttercup-like flowers. The leaves are about 6 in. in height, the pinnæ being three or four ranked, each having a large crimson blotch at its base. Its range of geographical distribution is from the islands of the Greek Archipelago (Chios and Rhodes), through Asia Minor, Syria, and Persia, to Affghanistan and Beluchistan. In Syria and Persia it is found in the corn-fields, and is used as an acid pot-herb. It is quite hardy, Mr. N. G. Elwes having flowered it in an open border, and it is sufficiently ornamental to deserve culture.—"Botanical Magazine," t. 6244.

Duvalia polita.—A South African succulent plant, better known in gardens under the generic name of Stapelia. It has branching, six-angled stems, which rarely exceed 6 in. in height, and bears glossy brown flowers about 1 in. in diameter. The polished lobes of the fleshy corolla are less replicate than those of any other species in the sub-genus Duvalia, and have tufts of club-shaped hairs in their angles. It well deserves culture as a curiosity.—"Botanical Magazine," t. 6245.

Eulophia macrostachya.—A slender-habited Orchid from Ceylon, where it is found at an elevation of from 2000 ft. to 4000 ft., and, according to Wight, it is also found on the eastern slopes of the Neilgherry Mountains. It was introduced to this country in 1837, from Peradenia, to the gardens of the Royal Horticultural Society, and it flowers ever year in the Orchid-houses at Kew. The pseudo-bulbs are slender, spindle-shaped, and bear two or three lance-shaped leaves; the flowers are produced on an erect spike about 2 ft. in height; the sepals and petals are lance-shaped, about half-an-inch in length, and of a pale green colour, the lip being much larger in proportion and somewhat saddle-shaped, with a gibbous spur behind; the colour is yellow with crimson streaks. It is a plant of easy culture, but not showy.—"Botanical Magazine," t. 6246.

Leucothoe Davisiæ.—A very pretty Californian evergreen shrub, from the Sierra Nevada Mountains, where it was discovered by Mr. W. Lobb at an elevation of 5000 ft. It was by him transmitted to Messrs. Veitch, who distributed it under the name of Leucothoe Lobbi. It is the only species of the genus which has been found on the western side of the American Continent. The fresh, green growths are each terminated by clusters of white, bell-shaped, Andromeda or Arbutus-like flowers. It is quite hardy, and deserves culture. "Botanical Magazine," t. 6247.

Agave Botterii.—A Mexican species introduced by Mr. Wilson Saunders through M. Botteri, after whom it has been named. The plant is now in Mr. Peacock's collection at Sudbury House, Hammersmith, where it bloomed in the spring of 1875. It is of dense habit, some forty or fifty dark green, lance-shaped, fleshy leaves, being arranged in a sessile rosette, the individual leaves being about 2 ft. in length, by 6 in. to 8 in. in breadth, the margins being armed with close-set, hooked spines. The flowers are borne on a simple spike from 6 ft. to 8 ft. in height, and are of a yellow colour, each segment being tipped with red. The lower part of the spike below the flowers is covered by imbricating, sharp-pointed bracts. It well deserves a place in all collections of succulent plants, but is very rare.—"Botanical Magazine," t. 6248.

Gamolepis euryopoides.—A pretty composite plant from Caffraria and Albany, where it is found at an elevation of 200 ft. It attains a height of about 1 ft., the slender, branching stems being rather densely clothed with ternate leaves, and terminated by bright yellow and rayed flowers 1½ in. in diameter. The plant belongs to a little known genus of Cape Composites, some of which mimic Mosses and Lycopods in their habit of growth. It grows well in a cool house on a shelf near the glass, and is worth culture.—"Botanical Magazine," t. 6249.

Odontoglossum cirrhosum.—A very handsome species from the western slopes of the New Granadian Andes, where it was discovered many years ago by Colonel Hall, who sent dried specimens to Sir Wm. Hooker. It is found at an altitude of from 5000 ft. to 6000 ft., and the credit of again finding and introducing living plants of this plant belongs to the brothers Rhaboch, who sought it under the direction of their uncle, the veteran traveller and collector, Roezl. It may be considered as a larger and richer coloured O. nævium magus, which it resembles in habit of growth. The flowers are 4 in. in length by about 3 in. broad, the pure white sepals, petals, and lip being narrowed out into slender, undulating tails, and are heavily blotched with chocolate purple.—"Floral Magazine," t. 222.

Root Hairs.—That the largest portion of the liquid used by the growing plant makes its entrance through the roots, from the soil, is a well-established fact; but those parts which are the most active in the absorption of this food material in solution were for a long time not so clearly understood. By careful experiments and microscopic investigation it is found that the extreme tips of young roots are about the only portion which take little or no part in this work. A short distance back from the growing points, on nearly all growing roots, may be seen with the aid of a microscope a large number of minute, slender bodies extending out in all directions from the surface of the root. These thread-like structures are not inaptly called root hairs, and consist of sac-like protuberances, as outgrowths from the epidermis or surface cells of the root. With the naked eye they are not easily seen, but their presence may be inferred from the manner in which they cling to the particles of the soil when a young root is lifted carefully from the earth in which it was growing. This power which they have of fixing themselves to the grains of earth is very great; so that when a plant is taken violently from the soil, large portions of these delicate hairs are broken from the roots and retain their attachment to the soil. As the root grows along in the earth new hairs are produced, while those behind perish as the root becomes woody, and a dense, non-absorbing, protecting epidermis is formed; so that the active life of a single hair is of short duration. The office of these hairs must have already suggested itself to the reader. By means of these prolongations the greater part of the absorption takes place, though the newly-formed surface cells are also active.—B. C. Halstead, in "Gardeners' Monthly."

POLLEN TUBES FOR THE MICROSCOPE.

I lately came across a passage in a popular work on Microscopy recommending the student who wishes to examine the pollen tubes of flowers to dissect a fertilizing stigma. Remembering my own early experience in this branch of microscopic preparation, my repeated disappointments after wasting my time in the most tedious manifestation, besides having seen the preparations of others who followed this method of procedure always end in failure, I am induced, more especially at this season of the year, when the opportunities of studying the pollen of plants are so many, to offer a few hints on a new method of observing these beautiful objects. Most persons must have noticed that when the stigmas of Lilium and other flowers have arrived at the period of fertilisation, a drop of nectar makes its appearance at their top. This nectar is the one thing necessary for exhibiting the growth of the pollen tubes. We will take for example the Lilium speciosum or L. auratum, as they usually produce the most nectar. If a plant or two coming into flower be put into the greenhouse instead of leaving them outside where the flies will help themselves to the nectar, we shall find that in a few days several stigmas will be ready with the drops pendent. Take an ordinary microscope slide and place the centre of it against the most liquid drop, which will remain on the glass; if not sufficient, another drop should be added from another pistil. Then touch the point of one of the mature anthers with the drop of nectar very gently so as to leave not more than about a dozen pollen grains on it, and it is ready for examination without even the usual covering of thin glass. If the object be examined directly with a quarter-inch object glass, or even a lower power, nothing will be seen but the pollen-grains, but in about half-an-hour a projection like a fleshy root will be seen at the end of each grain, and will continue to grow for from one to two hours, at the end of which time the pollen-grains and tubes will resemble in appearance very long snakes, the grain representing the head. The sap may also be seen running down one side of the tube, turning at the point, and returning on the other side. When prepared in this manner the object is perfect, and being free from foreign matter is clear and beautiful. In preparing the objects care should be taken not to place them in too warm or too dry a place, as the continuous growth of the pollen-tubes entirely depends on the length of time that the nectar remains in a sufficiently fluid state. The student must not be discouraged if he fails a few times, as he will be amply rewarded when he secures a good specimen, which may be made a permanent one without any further trouble than that of placing a piece of thin microscopic glass over it while the nectar is in a fluid state, and carefully pressing it down to eject the air bubbles. The nectar will soon harden, and the pollen-tubes be preserved in a perfectly transparent vehicle; prepared in this manner, I have a perfect specimen a year old. We may take it for granted that any flower which produces nectar in sufficient quantity will produce the tubes in the manner described; but I have been more successful with bulbous plants than any others, having obtained some beautiful objects from different varieties of Hymenocallis (Pancratium), Crinum, &c. The foregoing is a simple and successful means of accomplishing a delicate operation, which most botanical students, who in these days are invariably workers with the microscope, will be glad to know. James O'Brien.

Strawberry Runners for forcing.—Pieces of turf 2 in. thick, and of such a size as to admit of their being conveniently put into fruiting pots, if sunk in the ground just deep enough to allow them to be covered, and the runners firmly pegged in the centre, will be found an expeditious mode of obtaining fine, healthy plants for forcing. If the turf be dry, it should be soaked in a tub before it is used.—S.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

August 16th.

This was a better meeting, all things considered, than one might have expected; indeed, these fortnightly gatherings seem to be more popular than the Society's larger exhibitions. Some well-grown Victoria Nectarines came from Mr. Tillery, of Welbeck, and an interesting collection of Russian and other early Apples came from the Society's garden at Chiswick. Messrs. Veitch & Sons sent a richly-tinted form of the Australian Dendrobium bigibbum, to which a certificate was awarded. Messrs. Kelway & Sons contributed a bright and effective stand of Gladioli, and Mr. C. Turner one of seedling and other Dahlias.

First-class Certificates.—These were awarded to the following new and rare plants:—

Gladiolus, Dr. Hogg (Kelway & Son).—A distinct variety, the flowers of which are well arranged on a stout spike. They are white in colour suffused with rosy-lilac, the three outer perianth segments being pencilled with rosy-crimson.

Gladiolus, Rev. M. J. Berkeley (Kelway & Son).—Flowers arranged closely on a stout spike, and excellent in shape and substance, the segments being very smooth. In colour they are a soft vermilion, inclining to salmon, the outer petals being flaked with scarlet. It is a kind well worth culture in every collection.

Gladiolus, Lady Aberdare (Kelway & Son).—The spike of this variety, as shown, is rather rough and straggling, and the flowers are not so smooth and shapely as one might expect them to be in a variety, to which a certificate has been awarded. They are white in colour, the lower segments being boldly streaked with purple, and the margins of the upper segments delicately pencilled with rose. The colours, which are distinct, form its only recommendation.

Lobelia, St. Martin's Blue (D. Ross).—This is one of the most floriferous of all dark blue Lobelias, the plants shown being literally masses of white-eyed, deep indigo blue flowers, and even the foliage and flower-stems are deeply stained with the same colour. It forms dense tufts about 4 in. in height, which contrast well with Golden Pyrethrum or other bedding plants of a light colour.

Hybrid Begonia, Otto Forster (Frœbel & Co.).—This is said to be a hybrid between B. imperialis and B. Rex. It is of dwarf habit, having obliquely cordate, asperous leaves of a dark green colour, marbled with silvery greyish-green. The flowers are very inconspicuous, being of a greenish-white colour, and borne on short stalks down among the leaves, in which its beauty wholly consists.

Hybrid Begonia, Miranda (Frœbel & Co.).—Similar in habit to the last, the under surfaces of the leaves having the same curiously-punctured appearance. Their asperous, upper surface is dark green, marbled with silvery-grey. The flowers are greenish-white, like those of the last-named variety. This is said to be a hybrid between B. smaragdina and B. rex.

Dahlia, Canary (C. Turner).—This is a finely-formed flower, with a good full centre and very smooth, even pips. Its colour is a clear canary-yellow, very bright and distinct.

Dahlia, Drake Lewis (C. Turner).—A very fine flower, round and full, with a good bold centre. Colour bright maroon-scarlet, the edges of the pips flushing with scarlet when seen in a bright light. A noble flower for purposes of exhibition.

Retinospora tetragona aurea (Barron & Sons).—A dwarf, dense-growing Conifer, of pyramidal habit, each tassel-like tuft of foliage being tipped with gold. It well deserves a place in a sheltered position, being one of the most elegant and desirable of all the golden variegated species.

Dendrobium bigibbum superbum (Veitch & Sons).—An Australian Orchid, hitherto very rare in our gardens. The variety now shown differs from the type in being larger, but especially in the flowers being richer in colour (a distinct lilac-purple), and in the petals being broader than the sepals and Phalænopsis-like in shape. The sepals, which are lance-shaped acute, are distinctly tipped with white; the base of the lip is of a vivid purple tint, and the central lobe or blade is bright lilac pencilled with dark purple; the disc has a papillose central ridge.

Potato, Schoolmaster (C. Turner).—This is a handsome, pebble-shaped Potato, with a rough, crackling skin and very shallow eyes. It has been cooked at Chiswick, and found to be excellent in flavour.

To the following vegetables tried in the Society's Gardens at Chiswick first-class certificates have been awarded, viz.:—

Onion, Queen (sent by several seedsmen).

Onion, Trebons (also furnished by several seed firms).

Kidney Bean, Minier's First Early (Minier & Co.).

Kidney Bean, Rachel (Nutting & Co.).

Kidney Bean, Haricot Nain Blanc Quarantain (Vilmorin & Cie.).

Miscellaneous Plants.—Mr. Laing, of the Stanstead Park Nursery, Forest Hill, again showed his hybrid Fuchsia, now named Lord Beaconsfield. Messrs. Barron & Sons, of the Elvaston Nurseries, Borrowash, sent variegated plants of Lawson's Cypress and Retinospora tetragona aurea, to which allusion has already been made. Mr. B. Reeves, of North End Lodge, Walham Green, furnished a fine specimen of Crinum giganteum in flower. Its leaves, which are broadly strap-shaped, are bright green in colour, and the flowers, which are large, nodding, and Lily-like, are borne on stout scapes a yard high. A small collection of hybrid Begonias came from Messrs. Frœbel & Co., of Zurich, to two of the best of which certificates were awarded. Mr. Roberts, gardener to W. Terry, Esq., of Peterborough House, Fulham, sent two well-grown specimens of the old Gloriosa superba, each of which was profusely covered with red and yellow frill-like flowers. A fasciated stem of Lilium auratum came from Mr. C. Turner; and Mr. Quilter, of the Lower Grounds, Aston, near Birmingham, showed two new Lobelias, namely, Gem, a very dwarf lilac-purple variety, with a white eye; and White Beauty, also a dwarf kind, forming tufts about 6 in. in diameter, and bearing a profusion of pure white flowers. Mr. Green, of Holmsdale Road, Reigate, sent cut flowers of Stobæa purpurea, a Cape Composite, bearing single Chrysanthemum-like flowers on a decurrent Thistle-like stem. It is perfectly hardy, and grows from 18 in. to 2 ft. in height.

Fruit.—A collection of early Apples came from the Society's Gardens at Chiswick, the varieties being Early Red Flat, Duchess of Oldenburg, and American Crab, a curious, oblong, brown fruit with a prominent closed eye. The specimens shown were quite ripe and fairly well flavoured, the flesh being of a distinct, yellow colour. In addition to these there were two or three Russian varieties. Mr. Luckhurst, gardener to A. Nesbitt, Esq., Oldlands Hall, Uckfield, sent fruit of the fine, long-clustered Red Currant alluded to in our last report. It is named Victoria Currant, a large and very fine fruit. From the same exhibitor came two bunches of Ferdinand de Lesseps, one of the finest-flavoured of all Grapes. Mr. Jackson, Casewick, Stamford, sent a seedling green-flesh Melon of excellent flavour. A very good fruit of Cox's Golden Gem came from Mr. J. Perkins, Thornham Hall, Suffolk. Six or eight other Melons were staged, but none were of more than average merit. Mr. Luckhurst sent a dish of Early Rivers Peach, and Mr. Tillery, of Welbeck, highly-coloured fruit of Victoria Nectarines, very fine examples, and also of Barrington Peaches, the latter not having borne carriage well. A dish of highly-coloured Royal George Peaches came from Mr. W. Flint, gardener to C. Lee, Esq., Loam Pit Hill House, Lewisham, and from the same exhibitor came a good dish of Elruge Nectarines. Mr. Jas. Hussey, gardener to D. Pearce, Esq., Northend House, Hammersmith, sent four brace of Telegraph Cucumbers. Mr. Parsons, of Danesbury, Welwyn, Herts, showed twelve fine Magnum Bonum Onions, which appears to be a good selection of the Brown Spanish.

Preston Flower Show.—At this show, held the other day, the centre of attraction was the Ladies' Plate competition for six stove and greenhouse plants, grown from plants in 6-in. pots, in two years. The first prize, £25 and a gold medal value £12 12s., was won by Mr. F. M. Shuttleworth, who had, among others, splendid plants of Bougainvillea glabra, Allamanda nobilis, and Statice profusa. Ixora coccinea, with fifty-seven trusses on it, was awarded a silver medal as the best plant in the Ladies' Competition class.—James Smith, *Waterdale.*

NOTES AND QUESTIONS—VARIOUS.

Agaves in Bloom at the Alexandra Palace.—Permit me to direct attention to the fact that in my Alexandra Palace collection of succulents there are at present three rare Agaves in bloom, viz., A. laxa, A. Besserriana, and A. bromeliæfolia.—J. T. Peacock.

Potato Crops in Ireland.—Throughout Meath the cry is small Potatoes, owing to the dry weather; Veitch's Ashleaf is, however, very good; Early Rose, half the size and half the quantity; Climax, the same. Scotch Dons are the principal Potatoes grown by the farmers; every one is complaining of their smallness, but they are all sound as yet.—J. Clews.

Different Kinds of Peaches and Nectarines in one House.—We have for six weeks past been picking Peaches out of one house. We began with Early Beatrice, which was succeeded by Early Rivers, Royal George, and Elruge Nectarines, and just now (August 12) we have still a fortnight supply left. Peaches and Nectarines do well in cold houses here, being of fine colour, delicious in flavour, and abundant. The trees in the house in question "broke" without firing, and we only gave them a little artificial heat when setting. We steer a medium course between the two extremes, wet and dry, merely dewing them over when they are in flower.—R. Gilbert, *Burghley.*

Improved Pentstemons.—Florists seem to be making efforts to improve the quality of the blossoms of these fine old-fashioned summer-flowering plants. Mr. Ware has several beds of seedlings of them at Tottenham, the flowers on many of which are almost as large as those of a Gloxinia, and beautifully varied in colour.—S.

Succulents.—Many of your readers in town and country who take an interest in these would probably like to look through my collection. Allow me, therefore, to inform you that Mr. Croucher will attend each Tuesday, from 10 to 4 o'clock, at my residence, Sudbury House, Hammersmith, during August and September, and will have much pleasure in giving any information relative to their history and habits that may be required.—John T. Peacock, *Sudbury House, Hammersmith.*

No. 249.] SATURDAY, AUGUST 26, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ORCHIDS FOR CUT FLOWERS.

THE great and increasing demand for cut flowers of all kinds renders it necessary for those who wish to keep up a good supply to cultivate some of the showiest and most free-flowering Orchids for that purpose. Owing to the flowers of Orchids having persistent sepals and petals, being, in fact, all in one piece, they travel well, and last almost as long in the shape of cut flowers in a dwelling-house as they would if left on the plants. Indeed, the length of time which they last when cut is in many cases quite surprising; flowers of the beautiful snow-white Dendrobium infundibulum and of D. Jamesianum have been known to last three weeks in perfection, and afterwards to be well worth keeping, having dried off until they looked like paper flowers. A great many varieties last from ten days to a fortnight in water if properly attended to. Many who would be glad of the flowers of Orchids, and who find them so difficult to procure when they want them, are deterred from growing them by the notion that they require special houses for their culture and great skill in their management. This is a mistake; for although, in growing a general collection, it is best to provide suitable places for them, and the more the cultivator knows about them the better, it is a fact worthy of record that the showiest and best Orchids for cut flowers are the easiest to cultivate, and they may be grown by anyone in ordinary plant or fruit houses; indeed, the Dendrobium nobile and Cattleya Mossiæ have been grown in that way, and by men who scarcely knew one Orchid from another. The chief points to be observed in order to insure a plentiful supply of flowers are, to give the plants a good start in a warm, moist house, together with a liberal supply of water while they are growing, and after the growth is finished to give them a decided period of rest in a cool, airy, sunny house, during which time water should be altogether withheld or administered in but small quantities, the plants being kept perfectly clean at all times. They can be grown in any ordinary well-ventilated stove-house, and rested in a dry Vinery or cool greenhouse. Orchids, indeed, may be grown and flowered successfully in Vineries alone by shifting the plants from the growing houses to the resting ones as they may require it, and this may be done without the slightest danger to the Grapes. As soon as the buds are fully formed, and just before they burst, the plants should be placed in a cool-house and kept slightly shaded until the flowers have expanded to their full size; in this way they will adorn the plant for some time, and afterwards, if cut when fully formed, they will travel better and last longer than if they had been cut as soon as they opened. Those varieties which produce their flowers in succession on spikes or racemes, the older ones going off as the others come on, should have the flowers cut singly or in sprays as soon as they are ready, leaving the others to perfect themselves; and so the whole of the spike, which in some of the Oncidiums is several feet in length, may be made use of, and the supply of flowers kept up for a long period. An elegant kind of compound flower-vase, consisting of a tall vase in the middle for the larger kinds of flowers, and several shorter ones round it for the smaller ones, can be obtained; and this is particularly desirable for Orchids, as the short-stemmed flowers can be placed in the lower receptacles without being wired, and they can also be so arranged that each flower stands distinctly out, and can be seen in its entirety, only imperfect specimens, or those of which there are too many, being partially hidden. More depends on the arrangement of the individual flowers than on the profusion in which they are displayed; the flowers, which should scarcely touch each other, are too often wasted in making a posy, which, when finished, is little else than an unsightly mass of colour. Pelargoniums, Roses, &c., do not associate well with Orchids, although a few prominent blooms of Orchids may be added with advantage to a floral arrangement or bouquet of flowers of any kind. The flowers of bulbous plants, such as those of Crinum, Eucharis, Pancratium, Urceolina, Amaryllis, Griffinia, Iris, Ixia, and many tuberous-rooted plants, have something in the appearance of their flowers in common with those of Orchids, and these, whenever they can be obtained, should be arranged with them. All flowers look best when surrounded by their own foliage, but as it would be out of the question to expect the leaves of Orchids to be cut with the flowers, some other entire flag-like leaf, such as that of the Poa aquatica or any of the other broad-leaved Grasses or entire-fronded Ferns, should be obtained for the purpose. These will last good for a considerable time, and will greatly improve the effect. The arrangement should be set up as lightly as possible, and should be gone over every other day, the flowers re-arranged and supplied with fresh water; at the same time its appearance may be altogether changed by making use of different foliage. A very excellent thing to revive faded flowers, and one that is not generally known in that capacity is Condy's Fluid (crimson); flowers that come to hand withered, may be revived in a short time by cutting the stems afresh, placing them in a shady situation and in water, to which several drops of Fluid have been added. I have seen flowers which have been apparently worthless revived in this way, as if by magic. It is not necessary to use it with fresh and perfect flowers; but they may be preserved for a much longer time by cutting the stems and adding a few drops of the Fluid to the water just before they begin to fade, repeating it at each re-arrangement. The following are the best, most free-flowering and desirable of Orchids for growing for cut flowers, and they have the additional merit of being reasonable in price: most of them are so well known, even to many who do not grow Orchids, as to render it unnecessary to give long descriptions of them; it will therefore only be necessary to give the general colours which they present to a casual observer; the flowers of all are large and showy, many of them being very sweet-scented:—Cœlogyne cristata, snow-white, with orange blotch on the lip, spring flowering; Cattleya Mossiæ, rose, with purple and yellow marks on the lip; C. crispa, white, lip purple with rosy-white edge; C. intermedia, sepals and petals pale rose, lip purple; C. labiata, sepals and petals rose, lip crimson; C. Trianiæ, sepals and petals light rose, lip yellow and purple, winter flowering, as in the case of C. Mossiæ there are many kinds of this which vary much in colour. Cymbidium Mastersi, flowers white with yellow centre, winter flowering; Lælia purpurata, sepals and petals white, lip dark purple; L. Perrinii, sepals and petals rose, lip purple; L. autumnalis, sepals and petals purplish-rose, lip white, rose and yellow; L. albida, flowers white with pink and yellow lip; L. anceps, sepals and petals rosy-lilac, lip purple. These Lælias, with the exception of L. purpurata, are autumn and winter flowering plants. Anguloa Clowesi flowers clear lemon-yellow; Lycaste Skinneri, sepals and petals white or white and rose, lip spotted with various shades of crimson, winter and spring flowering; L. Harrisoniæ, sepals and petals creamy white, lip purple; L. cruenta, flowers deep yellow; Dendrobium nobile, flowers pink and white with crimson centre to the lip, winter and spring flowering; D. Pierardii, flowers blush-white, lip primrose; D. Wardianum, sepals and petals white tipped with mauve, lip yellow and crimson; D. formosum, flowers pure white, yellow centre to lip; D. chrysotoxum, flowers yellow; D. thyrsiflorum, sepals and petals white, lip orange; D. crassinode, sepals and petals white tipped with magenta, lip white and orange; D. infundibulum, flowers snow-white with yellow centre; D. superbum, flowers rose; D. Devonianum, sepals and petals white, veined with purple, lip white, purple, and orange. Most of the Dendrobes enumerated flower in April and May. Odontoglossum Alexandræ, flowers snow-white, with golden spots on lip; O. citrosmum, flowers white or blush; O. grande, flowers clear yellow, barred with brown; O. Pescatorei, flowers white, with yellow and rose mark on lip; O. pulchellum, flowers white; Phalænopsis Schilleriana, flowers rosy lilac; P. grandiflora and P. amabilis, flowers snow-white, with yellow marks in the centre: strong plants of Phalænopsis last in bloom several months. Zygopetalum Mackayi and Z. crinitum, sepals and petals greenish-yellow barred with brown, lip white, netted with blue; Trichopilia suavis, flowers white, spotted with rose; T

tortilis, sepals and petals yellowish-brown, lip white, spotted with pink: Oncidium flexuosum, O. sphacelatum, O. Cavendishi, O. tigrinum, the chief colour of which is bright golden yellow; Miltonia spectabilis, sepals and petals white, lip purple-edged with white; Calanthe Veitchi, rose-pink; C. vestita rubra, white, with crimson centre; C. vestita lutea, white, with yellow centre—these are winter-flowering; Aerides odoratum, white and light mauve; and Phaius Wallichi, yellowish-brown, white and purple. The greater part of the Cypripediums are well worth growing for cut flowers, although they are not general favourites with the bouquet-makers. There is one, however, which cannot be dispensed with—C. niveum, a kind with snow-white flowers covered with almost imperceptible mauve dots, and having a yellow spot in the centre. The whole of the varieties enumerated have fine flowers. They blossom at various times throughout the year, and many of the varieties, such as Dendrobium nobile, &c., can, by a little management, be brought into bloom at any time within six weeks of their proper flowering time; and they may be grown as easily and flowered as successfully in ordinary plant or fruit houses by any one who takes an interest in them as a Gardenia or a Stephanotis. Orchid flowers should always be cut in the morning before the sun gets strong, and they are best packed for transit in rather shallow tin boxes, about 18 in. or 2 ft. in length; a layer of cotton-wool should be placed in the bottom of the box and a sheet of very soft tissue-paper over it; the flowers should then be taken one at a time and placed in rows across the box, the heads being put all one way, and each flower pressed gently but firmly against the others; when a layer of flowers has been so placed a sheet of tissue-paper should be put over them; next a sheet of cotton wool with a sheet of tissue-paper on top of it; another layer of flowers may then be placed with their heads in the opposite direction to those previously put in, and so on until the box is almost full, when Fern fronds and other foliage sufficient to prevent the whole from shaking should be added. Some who are in the habit of forwarding flowers frequently by post or rail use little or no cotton-wool, but packages are often so knocked about that it is better to make all safe by using some, unless the package be conveyed by careful hands; care should, however, be taken wherever cotton-wool is used in packing Orchid blooms to place soft tissue-paper between it and the flowers; many of them being viscous, the cotton-wool sticks to them, and it is impossible to wholly remove it; it also takes the substance out of many thin-petalled flowers. There is little fear of the blooms being injured by close packing; one flower seldom injures another, but care should be taken in packing flowers not to mix soft-petalled kinds and those of a harder texture together, and also to keep the stems from rubbing the flowers.

James O'Brien.

FLOWER GARDENING IN HYDE PARK.

The display of summer-flowering plants in this, the largest of London parks, is a very interesting one, considering the drought and heat to which they have been subjected, and which has left an unfavourable impression, especially on such plants as Lobelias, Calceolarias, and Pelargoniums. Carpet and fine-foliaged plants, on the other hand, have thriven unusually well under the high temperature, and seem much better adapted for permanent summer and autumn displays in our climate than the flowering plants which have just been named. The triangular dell at the head of the Serpentine exhibits one of the most effective bits of planting in the whole park. It is just the place in which picturesque planting might be carried out to advantage, as it is sheltered by a background of shrubs and might have the advantage of still bolder water vegetation in the foreground than that which now exists, while as the whole arrangement can be seen from one side only, there is here scope for pictures of plant form and leaf beauty of which full advantage has scarcely been taken. As it is, the blue Shore Grass (Elymus arenarius) and the Royal Fern, which fringe the banks of the little stream go far to make up the beauty and interest of this little scene, and both, by the way, are hardy British plants which may be grown without trouble in any garden when once planted. The carpet bedding in Hyde Park this season does not strike us as being so effective as when it was confined to the front of the Ivy-covered cottage in Kensington Gardens, among fine trees and surrounded by glades of fresh green turf. As now scattered along the beds bordering on Park Lane, we do not find such striking effects in the way of colour as as we ought to do. There is one good feature, however, here which adds not a little to the beauty of the bedding arrangements, and that is, the strips of fresh green turf which surround all the flower-beds; these have been secured amid the almost more than tropical heat and drought by means of a free use of the hose and hydrants. Looking at this, our principal West-end park, as a whole, one cannot but regret to see so little being done in the way of permanent enrichment it by planting in it some of the many fine varieties of trees and shrubs now to be found in our best nurseries. In its borders and outlying beds, too, might be planted hardy perennials, as has already been done with such excellent results at the Crystal Palace and elsewhere. The

Flower-beds alongside Park Lane

are planted as they were last season, the majority of them being composed of masses of scarlet, salmon, pink, rose, white, or cerise Zonal Pelargoniums, margined with the crimson-leaved Alternanthera amœna; Pyrethrum parthenifolium aureum, popularly known as Golden Feather, and an outer double line of the rosette-like Echeveria secunda glauca. Here and there carpet beds are introduced, and at intervals occur mixed beds of fine-foliaged plants, edged with Echeverias, Alternantheras, and Golden-leaved Pyrethrum. These mixed beds are, to our mind, the best part of the arrangement, as in them one gets a glimpse of the free grace and luxuriance of noble-habited plants and just enough bright colour to contrast well with their different tints of green. Scarcely two of these dwarf sub-tropical beds, as they may be called, are planted alike; but the materials of which they chiefly consist are dwarf Fan Palms, Eucalyptus or Blue Gum trees in a young state, the golden-foliaged Abutilon Thompsoni, green-leaved Dracænas, D. indivisa, D. marginata, D. gracilis, and D. rubra or D. congesta being the most noticeable; the feathery-leaved Acacia lophantha being also used with excellent effect. These rise out of an undergrowth of Mignonette, a welcome addition on account of its grateful perfume. Others of these mixed beds are planted with golden-blotched Abutilon, large-leaved Aralias, Perilla, Abutilon Boule de Neige, Grevillea robusta, variegated Maize, young plants of Musa superba, and scarlet-flowered Erythrinas, all effectively grouped in varied masses and edged with blue Lobelia and Golden Feather. Some of the mixed beds of pale blue Ageratum and Yellow Calceolarias, edged with faint blue Lobelias and Golden Feather, present but a poor appearance. Among Pelargoniums, Lady Waldegrave (pink), Mrs. Ffytche (rose), and Miss Stubbs (crimson-scarlet) are good of their kind for bold masses. A modification of the late Mr. Donald Beaton's "shot silk" bed here struck us as being very effective. It was an oblong mass of the silver-edged Pelargonium Miss Kingsbury, mixed with Verbena Purple Queen. A sombre-tinted bed here also deserves notice, as being very distinct. It was planted diagonally with alternating lines of the dark purple Iresine Lindeni and Alyssum maritimum variegatum, studded with pearly-white flowers, the whole edged with blue Lobelia and Golden Feather Pyrethrum. Another distinct-looking bed was planted with the vivid scarlet-flowered Pelargonium Robert Fish and Verbena venosa mixed, the edging being the same as in the last case; a broad margin of Coleus, or better still, Iresine Lindeni, would have made this bed a very effective one. A striking pair of oblong beds were dotted with bushy plants of purple Iresine on a carpet of glaucous-leaved golden-flowered Gazania splendens, the whole margined with lines of Golden Feather, crimson Alternanthera, and glaucous Echeveria, in the order named. This combination is rich, bright, and permanent, and may well be repeated without any fear of disappointment next season. Pelargonium Lord Palmerston, a crimson nosegay, a good kind for bold masses, looked well here, even after the heavy thunder-storm to which it was subjected the other day. The young Oaks which alternate with the first series of beds as one enters at Hyde Park Corner, are already showing unmistakable signs of

suffering from the Planes on the right, and had better be removed to an opener situation, especially as they are out of place in their present position, a fact well shown by the succeeding stretch of turf on which Portugal Laurels and dwarf Fan Palms are plunged with good effect; masses of Pelargonium Vesuvius (scarlet), and Mrs. Turner, a rosy-lilac variety, in the way of Amarantus, here show themselves off to advantage, as does also a crimson-scarlet variety named The Principal. The series of beds between the Marble Arch and the first lodge are unworthy of remark; indeed, a clear breadth of well-kept turf, combined with the tree shade that exists here, would have been infinitely preferable and far more economical. The flower garden arrangements in front of the cottage in Kensington Gardens, near the Serpentine, are this year wholly altered, and the carpet bedding, once so popular there, has been superseded by a display of ordinary bedding plants which are not of a kind to call for any especial notice. In the arrangement the central four-cornered bed is the best; it is planted with crimson Coleus, edged with lines of Robert Fish Pelargonium, Alternanthera amœna, and Golden Pyrethrum, in the order named—a plant of the golden-blotched Abutilon Thompsoni being placed at each angle of the central mass of Coleus.

Carpet Bedding.

Among the carpet beds bordering on Park Lane, one of the best is an oblong scroll formed of serpentine masses of the crimson Alternanthera amœna and the orange and green-leaved A. amabilis alternately—the rhomboidal interstices being filled with the glaucous-leaved Veronica incana. Then comes a border composed of Golden Pyrethrum, then a line of Alternanthera amœna, the whole margined by a double row of Echeveria secunda glauca. Near the last is a corresponding oblong bed of the same area, but planted in a more complicated manner, the main design consisting of three crosses—the central one Coleus Verschaffelti, the two end ones Iresine Lindeni. Around the crosses is a bold, open fretwork of Alternanthera amœna, the openings being filled with Golden Feather, Santolina incana, one of the best of all silvery carpet plants, and the blue Kleinia repens, margined with lines of Golden Feather, crimson Alternanthera, and a double row of the glaucous Echeveria. Another bed, planted with glaucous-leaved succulents, orange and crimson Alternantheras, silvery Antennaria, and Golden Feather, was both effective and pretty. We next come to a couple of heart-shaped beds, in the centre of which, on a carpet of silvery Antennaria, are two fiddle-shaped masses of crimson Alternanthera and an oblong mass of pale golden Mesembryanthemums between their lower points, the whole being margined with lines of Golden Feather, crimson Alternanthera, and a double line of glaucous Echeveria. One of the oblong carpet beds in the dell at the head of the Serpentine is very pretty; its centre is planted with a mass of the soft golden-variegated Mesembryanthemum, on which are tridents of crimson Alternanthera around a central boss of purple Iresine, the whole being surrounded by a broad band of the orange-tinted Alternanthera amabilis, edged with a row of Echeveria glauca. Two heart-shaped beds, planted with the same materials, are also both bright and distinct, as is also a large oblong bed planted with crimson and orange Alternantheras, glaucous Echeverias, and Golden Fig Marigold.

Sub-tropical Beds.

These are in most cases very luxuriant and effective. Some large oblong beds of Canna variabilis are edged with the soft golden-leaved, scarlet-flowered Pelargonium Robert Fish, and a large serpentine bed of Palms, Dracænas, Arundinaria falcata, and Ficus elastica, on a ground-work of purple Amarantus and golden-blotched Abutilon is also well worth notice. The best part of the last arrangement, however, is the edging, which consists of a row of a strong scarlet Zonal Pelargonium and a margin of variegated Coltsfoot (Tussilago Farfara variegata). This last-named plant is unsurpassed for edging large beds of purple-leaved plants, and as seen here, contrasted with the purple Amarantus, it is one of the most distinct features in the park. The Castor-oil Plants, which grow satisfactorily in shady positions, have done well, and a circular bed of the deep green Solanum Warscewiczi, margined with a silver-leaved Pelargonium, is distinct, as is also an oblong bed of India-rubber Plants on a carpet of golden Zonals and Funkias, edged with a dark blue Lobelia. A circular bed, composed of Solanums, Wigandias, Hemp, Acacias, golden Abutilons, &c. on a carpet of Coleus, is also very good, the green foliage of various hues being set off by a belt of the bright silvery Centaurea ragusina compacta, edged with a dwarf purple-flowered Lobelia. A circular bed of Hemp, Ferdinanda, Castor-oil Plants, Blue Gums, Acacias, and Maize, margined with belts of gold and silver-leaved Zonals, is also very effective. Another long bed of Wigandias on a carpet of Dactylis variegata looks well, margined by a belt of the variegated Coltsfoot. Among other edgings we noted one as being very bright and good, namely, Iresine Lindeni, and a white Lobelia named Brilliant. We should like to see the blue Shore Grass (Elymus arenarius) oftener used than it is in sub-tropical arrangements, its habit and colour being alike distinct. One of the best of all the sub-tropical beds in the park is a large oblong one, composed of Hemp, from 10 ft. to 12 ft. in height—silvery Solanums, golden-blotched Abutilons, Maize, Ferdinanda eminens, Blue Gum trees, Erythrinas, and Acacias, on an undergrowth of Perilla, the whole surrounded by a line of scarlet Pelargonium Shakespeare. One or two beds of crimson-flowered Erythrinas, edged with variegated Euonymus, deserve notice; as does also a mass of Musa superba, edged with common Ivy; and a mixed bed of Hemp, Acacias, Solanums, and golden-blotched Abutilons, margined with a dark crimson scarlet Pelargonium, then a line of a silvery Zonal, and an edging of the dwarf purple Lobelia Omen, struck us as being massive and good. On the green undulating strip of turf near Albert Gate, Palms, Dracænas, and Cycads are plunged in profusion beneath the trees, colour being supplied by Pelargoniums and Alternantheras in circular beds at the foot of mop-headed Acacias, which always look fresh even in the hottest of summer weather. In the little valley at the head of the Serpentine are some good sub-tropical plants. The little streamlet in the centre is margined with bosses of fresh green Ivy, and some clumps of the blue Shore Grass (Elymus arenarius) which have been naturalised here, are now very effective, as are also some masses of the Royal Fern. These were planted last year for the first time, and appear to be thriving well. The planting on the back ground beyond the stream is not so pleasing, for although there is a profusion of fine foliaged-plants dotted over the turf, the effect is unsatisfactory; half the number of Tree Ferns, Palms, and Musas, well arranged, would have produced a much better result. The bases of the Poplar trees, however, are wreathed very prettily with cut-leaved Monsteras and other scandent Aroids; but what is really wanted to enable one to enjoy the planting here, is more breadth in the arrangement: one bold and well-varied group would be amply sufficient for the limited space under notice. The principal plants employed are Musa Ensete, Theophrasta imperialis, Dracæna indivisa, Sanseviera, New Zealand Flax, Dwarf Fan Palms, Tree Ferns, Alsophilas, Dicksonias, and a few dwarf Ferns and Aroids; the carpet beds near the railings are pretty, but the materials and colours might have been more varied than they are with advantage. F. W. B.

Euonymus microphyllus as an Edging Plant.—In one of Messrs. Lee's Nurseries at Isleworth, this plant is used as an edging in a very successful way. There have been many substitutes for Box, few resembling it, and none so good as it as a dwarf evergreen edging; but this neat little Euonymus resembles it so closely in stature and in density that many persons would probably pass by the edgings believing them to be Box, though they have a darker hue of green. Whether it be quite so hardy as Box we do not know. It is also a shrub of great value from its dwarf habit, closeness of texture, and dense evergreen character.—V.

Mahernia pinnata.—This pretty little plant from the Cape has been for several weeks and still is covered with its orange and red bells in the open border where I placed it early in May. It is one of those old-fashioned little gems which ought to be oftener seen than it is in our greenhouses and summer borders.—H. Harpur Crewe, *Tring*.

Large-flowered Bellwort (Platycodon grandiflorum).—This is one o the prettiest perennials now in flower. It is very nearly allied to the Campanulas, but the petals are of great substance, and somewhat resemble in colour and form a blue Crocus. The foliage is covered with a delicate bloom; the height of the plant is about 18 in. It should be carefully tied out to sma stakes, and is then a very attractive plant for the front of the herbaceous border. The root is tuberous, but perfectly hardy in most parts of the country —Salmonicefs.

NOTES OF THE WEEK.

The Double Scarlet Lychnis.—We have several times this year referred to this old plant, and have now to say that during the present unfavourable season, its beauty and persistence of bloom are very noticeable, some heads of bloom now appearing on side-shoots being very handsome.

Victoria Water Lily.—The Victoria regia is now flowering freely in the aquatic-house at Kew; its flowers measure nearly 1 ft. in diameter, are of a delicate rosy colour, and emit a delicious perfume.

Hyacinthus candicans hardy.—This remarkable plant would appear to be quite hardy about London, thriving well in sandy loam. It is one of the plants that might with advantage be placed among low shrubs—Azaleas and the like.

Dasylirion glaucum.—A fine specimen of this Mexican Bromeliad is now in flower in the succulent-house at Kew. The spike is fully 16 ft. in height, and a square of glass had to be removed to allow it to pass through the roof. It is a well-known greenhouse plant, with serrate, glaucous, linear leaves, but it rarely attains so large a size as the plant in question, and seldom flowers.

Canna Premier de Nice.—This is a beautiful flowering Canna with large and handsome clear yellow flowers. It is of course also valuable as a fine-foliaged plant. We notice this in Messrs. Hooper's (of Covent Garden) nursery garden at Twickenham. Probably this plant would be well worth growing in cool-houses, where Cannas cannot be grown well in the open air.

The Earliest Plums.—It will be seen from Mr. Ewing's report of the Plum crop in the Eastern Counties (see p. 215) that the earliest Plum is the Blue Perdrigon, an old and excellent sort, suitable alike for dessert or preserving, and that the next earliest is Hubbard's Early Prolific, which is some days earlier than Early Rivers.

The Weeping Walnut.—This is likely to prove a tree of great beauty and character; some specimens of it in Messrs. Lee's (of Hammersmith) tree nursery at Isleworth, are very interesting now from the extraordinary vigour with which the strong, richly-clad shoots are growing towards the ground. From the fact that weeping trees generally improve so much more than others with age, much may be expected from this tree in the future.

The Season in Covent Garden.—The supplies in Covent Garden are at a lower ebb than they have been for a good many years. The aspect of the market is indeed quite unlike what it usually is at this season, owing to the scarcity of produce. Prices are so high, too, as to induce the growers to bring all they can. Were it not for foreign produce, we should probably experience a scarcity.

The Drought in Midland Gardens.—Mr. Tillery, writing to us from Welbeck, says:—We begin in this district now to despair of rain coming to do any good to the root and Grass crops, for since the 2nd of the month little has fallen, and the heat has been tropical. We hear of thunderstorms and of heavy rains in the Southern counties, but none comes in the Midlands. I have the kitchen garden irrigated here, so have fared better than many this summer.

The Hail-storm Relief Fund.—Mr. John Fraser, The Nurseries, Lea Bridge, makes a renewed appeal to the public for contributions to this fund, which he says is increasing but slowly; £500, of which the Baroness Burdett Coutts gave £50, have already been subscribed, but so heavy has been the damage, that much more is wanted, and that quickly, as stock for 1877 must be secured before winter sets in. Those, therefore, who wish to respond to Mr. Fraser's appeal, should forward their subscriptions at once to him, or to any of the branches of the London and County Bank.

The Oaks of the United States.—Dr. Engelmann has a way o taking up some difficult subject, studying it for a long while, and finally coming out with something satisfactory, or as near that as possible. That, on our Oaks, just published in a pamphlet of twenty pages, is one of the best of his papers, and the most important practically, because it deals with such useful trees as Oaks. It is written in English, and plain English, too; so that any one with a moderate knowledge of botany, or a little patience and perseverance in studying it out, can use and understand it. Dr. Engelmann puts the Oaks into a good natural arrangement, points out the best characters for distinguishing the species, and brings in some new ones, derived from the way in which the leaves are rolled up, plaited, or otherwise disposed in the buds. He shows that the popular division into Black and White Oaks, from the hue and nature of the bark, agrees with a scientific classification; that the wood of the Black Oaks, of whatever kind, is always brittle, porous, and comparatively worthless, while that of the White Oaks is tougher, heavier, more compact, and furnishes the only sorts fit for the wheelwright's or cooper's use. He distinguishes 38 species, including Quercus densiflora, a very peculiar tree, native of California, of an Asiatic type, and in many respects more a Chestnut than an Oak; and he describes six hybrids—Quercus Lenna is one of these, a cross between the Scarlet Oak and the Shingle Oak; but Q. heterophylla, the Bartram Oak, he decidedly ranks as a species.—"American Agriculturist." [The whole of Dr. Engelmann's article is printed in this issue of The Garden. In a complete form it will be found valuable for reference.]

Chasselas de Fontainebleau Grapes.—French-grown fruit of this variety is now being imported to Covent Garden market, packed tightly in small oblong Poplar-wood boxes, the retail price being about 1s. per lb. It is just now the cheapest and best of all imported Grapes. This variety is largely grown in the open air on walls in the neighbourhood of Thomery, Fontainebleau, and St. Cloud, and is synonymous with our Royal Muscadine, which not unfrequently ripens its fruit on outside walls in this country.

Children's Flower Shows.—A flower show in connection with the Dewsbury Moor Board Schools took place on Saturday, August 12, and was quite a success. The bouquets of wild flowers were very tastefully arranged, and those obtaining the first prizes contained fourteen or fifteen varieties. The show consisted of three divisions, viz.: (1) Window-grown plants. (2) Cultivated flowers. (3) Wild flowers contributed by the scholars. The Dewsbury School Board have built three very handsome schools, but unfortunately the Continental idea of "Kindergarten" (at least, as far as the outer arrangements are concerned) seems never to have entered their minds. The large playgrounds are strewn with cinder-ashes, no portion being set apart for scholars' gardens.

Savoy Approach to the Thames Embankment.—The footpath on the right-hand side of Savoy Street, leading from the Strand, has been extended to the Thames Embankment, forming what is to be called the Savoy Approach, a much-needed outlet near Waterloo Bridge. The wall of the Savoy Chapel-yard has been set back, and the pathway, for almost the entire length of the street, is asphalte. We fear, however, that a good many accidents are yearly in store for us in slippery weather, owing to the excessive steepness of the gradient by the church-yard. A handsome iron railing is in preparation, which will divide the Approach from the adjoining property of the Duchy of Lancaster, at the end of the Embankment gardens. The Approach is now open to the public.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

The Tiger and Japan Lilies (L. tigrinum and L. speciosum) are the great attractions of the week, the double Tiger Lilies being very fine, as are also the display of Japan Lilies grown in the open ground at Barr's trial ground. The Œnotheras continue to be among the most beautiful flowers of the season, the lovely white Œ. speciosa being now among the most attractive. To some extent the best plants of the week are those which naturally bloom earlier, but there are certain plants peculiar to the season which are effective, particularly the Golden Rods and the Asters, of which last there is a good collection at Kew. There is little to choose among the Golden Rods, which are mainly fitted for the wild garden, but among the Michaelmas Daisies there are many kinds worthy of a place in the choicest borders, and also excellent for masses and groups of autumnal flowering plants. The narrow-leaved variety of the Olympic St. John's Wort, growing at Messrs. E. G. Henderson's, is a very pretty plant, and seems distinct from the plants which we spoke of as growing at the Hale Farm Nurseries some weeks ago. Ranunculus Lingua is beautiful by the water-side. We noticed the White Lavender, a good addition to the wild garden, at Henderson's. The warmth of the present season has brought out the beauty of Platycodons in a remarkable degree; these are capital plants for warm soils and districts. Veronica japonica is the name of a stout and handsome species growing at the Wellington Nurseries, where the uncommon Gentiana excisa is also in bloom. For the wild garden it is important to mention Eupatorium purpureum and other plants of the same race. Marvel of Peru is also very pleasing when grown in warm, rich soil, and in variety. Nepeta macrantha is an uncommon kind in flower at Ware's, where is also the star-like Diplopappus umbellatus; Gladiolus purpureus is also making a good show. Among climbers, the Scammony (Convolvulus Scammonia) may be mentioned as graceful and free-flowering, though not so bright in colour as many of its kind.

Tall blue Lobelia (L. syphilitica).

Perennial Flax (Linum perenne).

White Evening Primrose (Œnothera speciosa).

Gentian-blue Pentstemon (P. Jeffrayanus).

Entire-leaved Clematis (C. integrifolia).

Abronia umbellata.

Drummond's Evening Primrose (Œnothera Drummondi).

Common Arrowhead (Sagittaria sagittifolia).

Sedum Rhodiola.

Hardy Opuntia (O. Rafinesquiana).

Canadian Golden Rod (Solidago canadensis).

Œnothera Lamarckiana.

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

THE INDOOR GARDEN.

PLANTS SUITABLE FOR FORCING.

Many plants are cultivated in this country, whose natural period of flowering is during winter and early in spring. They are, however, mostly natives of tropical countries, and must, on that account, be grown in a high temperature. To this rule there are, however, sundry exceptions, most notable among which are such plants as the Camellia, many of the Cape Heaths, some of the Himalayan and other Rhododendrons, &c.; but it is, nevertheless, certain that the supply of flowers during winter would be somewhat meagre, were it not supplemented by the produce of various kinds of plants forced into bloom at periods long anterior to their usual or natural time of flowering. By this practice, the flowering season of such plants is very often considerably extended, and their beauty and fragrance can be enjoyed for a longer period. This is, of course, very desirable, as, in the estimation of many, the beauty and perfume of the most choice exotics fall short of those of such old favourites as the Rose, the Pink, the Violet, &c. My present object, therefore, is to point out the treatment which will be likely to induce a few species of the more common plants to readily submit to the process of forcing, so as to assist in meeting the demand for cut flowers and plants in bloom which already exists in almost every establishment, and more particularly so during winter and early spring.

The Rose, being the acknowledged queen of flowers, is deservedly held in the highest estimation during winter and early spring. In former years, when the old Provence or Cabbage Rose was the only variety attempted to be forced, it was found to be somewhat difficult to cut Rose blooms in anything like abundance early in the season; but now that difficulty can hardly be said to exist, as with the assistance of the many suitable varieties of the Hybrid Perpetual and Tea-scented sections, Roses may generally be had in bloom, more or less, throughout the year if desired, and in many garden establishments the display of bloom upon pot Roses during March rivals that of July. All kinds of Roses, but more particularly Hybrid Perpetuals, will readily submit to the process of forcing, and the plants may, with ordinary care, be kept in a healthy condition, and forced year after year for a long period. A collection here, consisting chiefly of the older varieties of the Hybrid Perpetual and Tea-scented sections, has been forced more or less every season for at least twenty years, and has seldom, if ever, failed to furnish abundance of bloom from about the middle of February until flowers could be cut from plants out-of-doors. These plants are nearly all upon their own roots, and were originally potted in rich, light soil, in pots some 8 in. in diameter, and they still continue to occupy the same pots, or pots of similar dimensions; but they are, nevertheless, regularly re-potted each season, when the drainage is carefully renewed, the balls of soil reduced, and the roots cut back so as to admit of a portion of fresh rich compost being annually introduced. This re-potting generally takes place early in January, when the first portion of the plants is introduced to the forcing-house, where their roots are placed upon, or partly plunged in, a slight bottom-heat, and in an atmospheric temperature not exceeding 55° for the first fortnight.

Pinks.—Next to the Rose as a suitable plant for forcing stands the Pink, and the varieties of it adapted for this purpose are now somewhat numerous. They are chiefly related to Anne Boleyn, a well-known forcing sort, which may be considered as the type of the section. Cuttings of the necessary stock of each sort should be inserted annually early in March, and the earliest batch of forced plants will generally furnish the supply of cuttings, which will be found to strike root very freely in a compost formed of about equal parts of sharp river or silver sand and finely-sifted leaf-soil, using well-drained pots of about 6 in. in diameter, placing them upon a slight hot-bed, and covering them with a hand-glass. Treated in this manner they will soon become well rooted, and when that is found to be the case, they should be potted off into 3-in. or 4-in. pots, and placed in a close-growing temperature until they have become fairly established, when they should be removed to a cold pit. As soon as the pots have become well filled with roots, they may be shifted into their flowering pots, which need not exceed 5 in. or 6 in. in diameter, and placed in any sheltered but open situation out-of-doors; or they may be planted out in a bed of moderately rich, light soil in the open ground, lifted with good balls, and potted in October, using soil of a rich, light character mixed (if thought necessary) with well-rotted hot-bed manure or leaf-mould. Among the best sorts are—Plato, or Lord Lyons, Rosy Morn, Mrs. Pettifer, Claude, Coronet, Garibaldi, Most Welcome, The Duchess, Miss Jolliffe, and one or two others.

Deutzia gracilis.—This dwarf-growing, deciduous shrub, although sufficiently hardy to be cultivated in the open air, is nevertheless seen to the greatest advantage when treated as a greenhouse plant. It is easily forced into flower during winter or spring, when it is found to be exceedingly useful for the decoration of the conservatory or greenhouse, and seldom fails to furnish an abundant supply of pure white flowers resembling Orange blossoms. The plants remain for a considerable time in bloom. It may be increased by division of the old plant, or the young unripened shoots upon plants which have been forced may be formed into cuttings, and will be found to strike root as readily as Verbenas, when placed under a hand-glass in the propagating pit. When the plants which were forced are out of bloom, they should have the shelter of a cold pit or frame until the beginning of May, when they should be cut slightly back, cutting out a portion of the old wood, &c., and planted in any ordinarily rich light soil, where they will, during the ensuing summer, produce and ripen the young shoots, and may generally be forced year after year for some considerable time. It is, however, better to have a stock of suitable-sized plants in the reserve ground from which to select the necessary number of plants required for forcing each season, potting up the same towards the end of October, and transplanting those not intended to be forced, cutting back the roots, &c., more or less at the same time, so as to prevent the plants from becoming unduly large. By pursuing this, or some similar system, it will seldom be necessary to force the same plants two years in succession.

Double-flowered Japan Cherry (Cerasus japonica multiplex).—This is another white-flowering dwarf shrub, easily forced into flower, and then it is an exceedingly elegant object for the decoration of the greenhouse, &c., producing its clear, double white, rosette-like blooms, intermingled with bright green foliage upon long shoots of the previous summer's growth. The treatment which has been recommended for the Deutzia will in all respects apply also to this plant.

The Persian Lilac.—This, in common with many other hardy shrubs, such as the many varieties of Spiræa, flowering Currants, the Guelder Rose, Weigelas, Azaleas, Kalmias, and Rhododendrons, may be selected of suitable dimensions, potted up about the end of October or early in November, and successfully forced into flower during the succeeding winter or spring. But by subjecting such plants to a system of preparation for forcing, a better and more uniform result may generally be looked for. And a method of treatment which has been pursued here for many years with the Persian Lilac applies equally well to many other deciduous shrubs. Some old plants or rather stools having been dug up, a number of suckers were selected having clean stems, about 9 in. or 1 ft. in length, each being furnished with a few young fibres. These were planted in lines in the reserve ground, and were encouraged to form heads during the ensuing summer; early in the following spring the shoots composing the heads were each cut back to within two or three eyes, and during the second summer most of the plants had formed heads consisting of some twenty or more shoots, each terminating with a flower-bud, so that the number of plants required for forcing were selected and potted during October, and were successfully forced into flower at various times during the ensuing winter and spring. When such plants are out of bloom, it is advisable to shelter them until about the middle of April, when they should be turned out of their pots and again planted in the reserve ground; the shoots should be cut back to within an eye or two of their base, and at the same time the plants which have not been forced should be transplanted; their roots, if necessary, should be cut in, so far as to prevent them from becoming too large for potting; and the shoots should be all pruned in, in the same way as has been recommended in the case of plants which have been forced, so that they are never allowed to flower, unless when they are forced into bloom. Soon after being cut back, young shoots will probably be developed in greater numbers than may be required, and it may be advisable to thin them out, more or less, so that those left may become thoroughly ripened, and if so, every shoot will generally be found in the autumn to be furnished with a bloom bud; such plants may be lifted and potted into pots some 8 in. or 9 in. in diameter, and they will soon, when placed in favourable circumstances, produce from 50 to 100 spikes of bloom.

Herbaceous Plants.—Among those suitable for forcing, the Dielytra is well worthy of consideration. It is easily forced into bloom, and is then an exceedingly effective plant for the decoration of the greenhouse or conservatory, where in winter and early spring it is probably seen to more advantage than when growing and flowering in the open air, where it is exceedingly liable to be injured by the frosts which generally occur during the early part of May; the

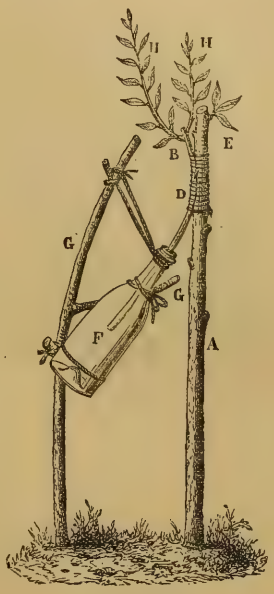
circumstance of being grown under glass, too, has the effect of giving a delicacy and elegance to both the foliage and flowers, which they possess in a less degree when growing in the open air. The Dielytra requires little or no preparation for forcing; all that is necessary is to pot up the desired number of roots in pots of various sizes, early in autumn, plunging them in cinder ashes in a cold pit or frame, and introducing portions of them at intervals into the forcing-house; as soon as they are in flower they should be removed into some cooler structure, such as a greenhouse or conservatory. The Hoteia (Spiræa) japonica is another exceedingly useful plant for forcing, on account of its fine foliage as well as its large panicles of feathery-white flowers, which it usually produces in great abundance, and which last long in perfection. It is less easily excited into growth than the Dielytra, but in all other respects the treatment recommended for that plant is also applicable to the Hoteia, *i.e.*, potting the roots in autumn, giving them the shelter of a cold pit, and introducing them at intervals into the forcing-house, where as soon as growth commences abundance of water should be given. In the open air the plant thrives best in a somewhat damp situation. The soil and climate of Holland appear to be better suited to the culture of this plant than those of this country; consequently it is imported in considerable quantities annually from Holland in clumps ready for potting and forcing. Solomon's Seal is likewise admirably adapted for forcing, being easily excited into growth, and it seldom fails to produce abundance of shoots, clothed with innumerable, silvery, bell-like flowers; it is indeed much more effective when grown in pots under glass, than when it is growing out-of-doors. It should be cultivated in beds of rich light soil, in an open situation, and from these the plants required for forcing should be annually potted up, about the end of October, using pots of some 6 in. or 8 in. in diameter. It will succeed in any ordinary light soil, and after being potted, should be plunged in and covered with cinder ashes, where the roots of the plants will soon become active, and from this plunging material the desired number of pots should be introduced to the forcing-house at intervals, so as to have a succession of blooming plants. Plants of it which have been forced should be afterwards planted out in the open ground, as it is not advisable to force the same plants two years in succession. Of the Lily of the Valley clumps should be potted for forcing in autumn, as soon as the foliage has decayed. After being potted, it should be plunged and covered up to a depth of 5 in. or 6 in. in old tan or cinder-ashes, and portions should be transferred to the forcing house at intervals, in order to keep up a succession of bloom. Like the Hoteia, it is annually imported in considerable quantities from Holland, in patches of a size suitable for potting, and the imported roots are found to succeed better than those produced in this country. Runners of the Neapolitan and other sweet-scented Violets should be encouraged to form roots as early in the spring as possible, and to promote this the surface of the beds in which they are growing should be covered with a portion of finely-sifted leaf-soil and silver sand; as soon as they have become well rooted they should be separated from the old plants, and planted out in a bed of rich, light soil, in a somewhat shady situation, supplying them well with water during dry weather, and carefully removing all runners from the young plants, which should be potted into pots of a suitable size early in October, and placed in a light, warm situation near the glass, where they will soon commence to bloom, and will continue to produce flowers throughout the winter and early spring months; or they may be planted out in a frame upon a light bottom-heat, keeping them as near the glass as possible, and admitting air whenever the state of the weather will permit. There are also many other hardy flowering plants which might be potted up in autumn and used for the decoration of the greenhouse, &c., during winter. The blooms of such plants as the Christmas Rose, for instance, are much improved in purity of colour, length of flower-stalk, &c., when produced under glass. There are also varieties of the Crocus, the Jonquil, the Winter Aconite, the common Snowdrop, and others equally suitable for indoor decoration. Such plants flower naturally during winter; forcing is in their case unnecessary. P. Grieve.

Culford.

Disa grandiflora at Home.—This, when well grown and flowered, is one of the best of all terrestrial Orchids, bearing as it does glowing crimson, scarlet, and yellow flowers on stately stems 3 ft. and 4 ft. in height. It is a native of the Cape of Good Hope, growing on the summit of Table Mountain. Harvey says:—This summit is very frequently enveloped in mist, especially at the season when the Disa blooms. It is very cold also, and the mist comes accompanied with a strong, cold, south-east wind. After this succeeds the scorching sun of lat. 33°. The plant only grows along the steep, boggy, spongy margins of a stream, which has water in it at all seasons, but which in winter must be so swollen as to cover the plant. The margin is completely clothed with the Disa, but immediately beyond is a margin of Restios, which, bending over, afford considerable shade to the roots and foliage, leaving the flower-stalks room to peep out at the sun. The whole secret of successful Disa culture, therefore, consists in abundance of moisture (even when the plant is at rest it should not be dry) and partial shade. It does best in a shady pit or greenhouse, where the atmosphere can be kept cool, airy, and moist, and repeated syringings greatly conduce to its luxuriance.—B.

BOTTLE GRAFTING.

This modification of inarching or grafting by approach may often be successfully employed when other methods fail. In inarching, properly so called, two branches or stems on their own roots are spliced together and kept in contact until a union is effected, and if the plants be in pots, or otherwise



Bottle Grafting.

portable, this method is practicable enough. It often happens, however, that subjects to be grafted are planted out, and that the scion must be severed from the parent plant. It is in cases like this that bottle grafting, as shown in our illustration, becomes useful. The scion B, with its two shoots, H H, is cut from the plant and splice-grafted on to the stock A at D, where it is bound firmly in the usual manner. The base of the scion is then inserted in a bottle of rain-water (F) which is kept at the required height by a forked support, G G; but sometimes, when the stock is stout enough, the bottle is supported by it. The stock is headed back to a shoot (E), which is left to draw the sap up past the point of union between stock and scion. Oleanders, Camellias, Myrtles, and many other plants may be grafted successfully in this way, and in some cases the scion not only unites with the stock but also pushes out roots into the water; in that case the part below the union may be removed and planted as a cutting. There are one or two modifications of this method of grafting; the Japanese, for instance, who employ it largely, use a bag of wet earth or earth and Moss instead of the water bottle, and propagators in this country obtain the same results by pushing the base of the scion into a Potato or Turnip. B.

PREPARING FOR HEATING HOTHOUSES.

In hothouse building the heating is always one of the most serious items, and in the working expenses afterwards the coal bill tells up more than anything else in the sundries account, and is always a heavy premium that has annually to be set against the returns. This was felt to be the case so much by some of the nurserymen during the coal famine that they were compelled to restrict or altogether abandon the culture of some subjects for the time being, and either keep their houses idle or fill them with plants that required but a minimum amount of fire-heat. Without going at any length into the subject of heating, I propose to offer a few hints concerning heating apparatus and their arrangement in the first instance, and stoking in the second. Proprietors generally put such work entirely in the hands of what is called a horticultural engineer; perhaps a respectable and capable one, who will execute the work in a satisfactory manner, but just as likely one who is wholly undeserving of the name—for their name is legion now-a-days, if we include every local ironfounder who professes to heat buildings of all descriptions, though knowing nothing of the business himself, but trusting entirely to common workmen, whose knowledge is purely of the rule-of-thumb description, both to plan and do the work. A respectable ironfitter informed me that a great portion of his work consists in overhauling and re-arranging work that had been done before in gardens. In heating plant or fruit structures it is necessary first to provide ample heating surface, according to the temperature required—say 1 ft. of radiating surface for every 14 ft. or 15 ft. of cubic air contained in a structure where very high temperatures have to be maintained in cold weather, and less considerably in greenhouses, intermediate plant-houses, late vineries, &c., which are not kept warm during the winter, and which require but little fire-heat in summer. Secondly, the coils of piping should be distributed as conveniently as possible over the floor of the house, in order to heat the air equally and keep it all in motion; and they should in no case be brought into too close proximity with the roots or foliage of the plants—a very common arrangement when the heating is left entirely in the hands of the engineer, and always fraught with destructive results. And thirdly, one or two coils should always traverse the front or sides of the house where "front air" is admitted, that the air may be heated by passing over the pipes before entering the house. Next, though the circulation from the boiler will go on in an unequal and erratic manner, and with more or less trouble in watching, if the pipes have not a continuous rise from the boiler, and even if they dip a little after leaving it, it is always very advisable to avoid such arrangements, especially as it is seldom or never needful to adopt them. I have had to do with heating under very many different circumstances, but never found it difficult, with a little forethought, to arrange stoke-hole and apparatus in a way that permitted a gentle and continuous rise of the pipes after leaving the crown of the boiler. Indeed, hardly any perceptible rise is necessary, for the dip of the return pipes to the bottom of the boiler after they enter the stoke-hole is of itself almost sufficient to establish the up and down circuit of the pipes, but no dipping and rising again should occur between the two points. I have been in the habit of planning our heating according to these simple rules on all occasions for many years back, and I have never had a flaw to repair afterwards.

Stop Valves.

One word about these, which give more trouble perhaps, and call for more altering than anything else. No end of stop valves are recommended by the trade, and all of them more or less suitable and liable to get out of order. The surest and least troublesome kind with which I am acquainted is the common brass union stopper, about 1 in. or 1½ in. in diameter. Much dispute has occurred as to the propriety of connecting 4-in. hot-water pipes with narrow connections, but I have seen many hundreds of feet of piping where all the hot water had to flow and return through narrow brass stoppers—one on the flow and another on the return pipe—both turned by the hand like a common water tap; and though there were other coils of pipes attached to the same boiler, worked with stoppers of the same diameter as the pipes, scarcely any perceptible difference could be detected between them as regarded the circulation, if both were opened at the same time. There is a useful kind of valve made by several parties, called a "double." The valves are inclosed in a box, which connects the flow and the return together, and when they are made to shut, not against, but away from the boiler—for example, when entering another house—the water circulates as far as the stopper, while the cold water in the house beyond is held back. The advantage of the valve is that you can carry the hot water through any number of houses with a valve at each by a single coil of pipes; whereas when single valves are employed a special supply coil is needed to carry the water from the boiler to each division, which greatly increases the amount of piping and consequent expense. I use these valves a good deal, but they are not to be recommended when the hot water has to travel a long distance from the boiler, unless the boiler is more than equal to its task, as, owing to the inclination of the water to return at the first open valve, there is a sensible decrease in the temperature of the pipes beyond it. In a pit 200 ft. long, in three divisions, the valves were arranged in this way, one coil of pipe doing duty for each division, the boiler being at one end; but it was found that the heat scarcely reached the third division, unless the pipes in the first were made much too hot. The same end may be gained by putting an H pipe in at each house, with single stoppers fixed beyond the connection; and if a stopper be fixed in the centre of the H as well, the difficulty as regards circulation will be got over. The plan is more expensive, however. In one range, containing about 700 ft. of piping, I find the double valves to work satisfactorily with the boiler placed equidistant from each end of the range. As the hot-water men invariably put in double valves to shut against the flow—which, as has already been hinted, at once closes the connection between the flow and return pipe and arrests the circulation—it is well to give explicit directions on that point at the beginning.

Boilers.

As to these I would only say, the simpler they are in construction the better. Perhaps there are no really bad boilers made, if they are only used intelligently; but it is not always understood that when a boiler is allowed to get dirty—*i.e.*, crusted with soot—its conducting power is very greatly impaired; and I find by long experience that complicated boilers are the worst in this respect, principally because workmen do not take that pains to keep them clean which is absolutely necessary. When the flame licks the clean iron, its heat is conveyed to the water in the boiler much quicker than when it has to traverse a thickly-sooted surface. For these reasons, and also because they are adapted to burn any kind of fuel, we have long preferred the common or winged saddle boilers, of which there are several varieties. They almost keep themselves clean, and an ordinarily good fireman can do all he wants with them. They present a greater amount of surface to the direct action of the fire than any other, and their heating capacity is simply a question of length and breadth. It is seldom a saddle boiler breaks down till it is worn through by long service or bad usage; and by the latter I mean want of care in allowing it to rust by exposure to damp during the season when it is not in use. A boiler which is constantly employed wears better than one that is fireless for some months every year; therefore see that boilers which are not employed much, during the winter particularly, are occasionally fired, just to dry the furnace, and so preserve the boiler and joints.

Stoking.

Ask any one versed in this matter, and he will tell you probably that it lies with the stoker principally whether his coals are either saved or wasted, and that he has far more trouble on that head than with his boilers. In all gardens, great and small, the stoking, as a rule, devolves upon a subordinate, who has often but little skill in the business, and less interest. He defers cleaning his boiler till the last moment, when he should clean it every morning, or at least several times a week; he takes little or no pains to save his half-burnt cinders; and his only idea of firing is to heap on coals as fast as his fire subsides, without any other result than that of raising the coal bill, which he is a far better hand at doing than raising the tempe-

rature. If these remarks were not called for we should not make them, but a long experience in the matter has convinced us they are true. In a large place where there are many fires, and where the men take turn about by the week or day at the stoking, we find by observation that each man varies in the amount of coal he uses in his turn, and that sometimes one man will use nearly twice as much coal as another, all other things being equal, unless supervised. In short, we have reckoned from pretty reliable data that the waste of fuel by careless stoking alone amounts in value to at least 20 or 30 per cent. Of course, by sifting the ashes afterwards at the heap, a percentage of that is saved, no thanks to the stoker, however. What he wastes needlessly in many other ways cannot be saved, nor is it possible always to prevent him wasting. The stoker should first of all be made to understand the construction of his boiler and its object, and the direction of the flues, &c.; and secondly, he should keep it clean by running the soot hoe or brush through the flues frequently, by keeping it clear at the throat or neck, and taking care that no clinkers are left between the furnace bars to choke the draught; with tubular bars he will not be troubled with them at all. In getting up heat—supposing he has a cold furnace and cold pipes to begin with, and that he wishes to get up the temperature as soon as possible—let him take a little pains to light his fire in the first instance without using much coal, and then leave it with a full draught. When it is fairly ignited he should push the fire abroad with the hoe, not pushing all to the back, that the heat may escape up the chimney at once, but in such a way that the flame will strike the under-surface of the boiler its whole length or width, according to its shape, and impart as much of its heat to it as possible before it escapes into the side flues. At the same time he may add a considerable quantity of fuel, keeping it principally near the furnace door, and leave it with a good draught as before. In a short time he may stir the fire again, pushing some of the reddest of the cinders to the back to consume the smoke as it passes over them, and put a little more coal on in front and leave it. This ought to get up the heat, and as soon as he finds his pipes are hot enough he should shut top and bottom doors of the furnace, leaving only the air-holes open, and push the damper in half-way or more; his duties will then be over for six, eight, or ten hours, according to the weather or circumstances. One thing should always be borne in mind that nothing is gained by always keeping a great fire. When the fire is fairly started, do not be always mending it by adding fresh fuel, which is pure waste, but get up a good fire and let it burn well down, only not so low that there will be a subsidence of the temperature before the heat can be got up again. Lastly, in making up fires for the night or for long intervals, always see that the temperature for the time being is at its maximum. A "made-up" fire only sustains the temperature, but it does not raise it. CHEF.

Some good Delphiniums.—Bella Donna, flowers large, bright azure blue with white centre; C. Glym, bright shining blue with conspicuous white centre, flowers large, semi-double, borne on large, dense, freely-branched spikes; Coronet, dark shining blue, with purple and orange centre; Formosum, flowers large, rich dark blue with white centres, borne in great profusion on long dense branching spikes, habit vigorous; Grandiflorum plenum, dark shining blue, tinted with bronzy red, flowers large, semi-double, borne on branching spikes; M. le Bihan, outer petals bright blue, inner petals rosy purple, flower-spikes, 18 in. long, with many lateral spikes on the same stem, flowers large, semi-double, set close on the stem, resembling a beautiful Hyacinth; Madame E. Geny, reddish-purple tipped with blue, centre blue and white, flowers large, semi-double, borne on very long and freely branched spikes; Magnificum, rich brilliant blue suffused with bronzy-red, white and orange centre; Nahamah, dark blue, suffused with bronzy crimson, centre orange brown, centre flower-spikes 18 in. long, producing freely lateral spikes to within 1 ft. of the ground; Prince of Wales, brilliant azure blue with white centre, flowers semi-double, neatly arranged on long dense spikes, abundant and continuous bloomer; Pulchrum, lavender-blue, suffused with rosy-pink, white, and orange centre; Ranunculiflorum, rosy-lilac, edges of petals broadly margined with cobalt blue, flowers very double, densely placed on long branching spikes.—ROBERT PARKER.

THE FLOWER GARDEN.

TRICOLOURED OX-EYE DAISY.

(CHRYSANTHEMUM BURRIDGEANUM).

THIS beautiful hardy annual, which has now been some years in cultivation, was raised from seeds of C. tricolor, by Mr. Burridge, a seed-grower in Suffolk, after whom it has been named. The parent species or type, C. tricolor, or C. carinatum, as it is often called, is a native of Barbary, whence it was introduced about 1796, and has since been grown as a distinct and effective autumn-flowering plant. The improved variety, as shown by our illustration, is a compact and bushy-habited plant, and bears large golden-yellow flowers, each having a dark purplish-brown zone and a purple eye or disc, the colours being very bright and well defined. It is best

Chrysanthemum Burridgeanum.

propagated from seeds sown towards the end of May in open beds or borders where the plants are to flower, or they may be sown earlier in pans or boxes of light, rich earth, in a pit or frame, from which they can be transplanted after all danger from frost is over. Planted singly in rich soil, in an open and sunny position, it forms one of the most beautiful of all composite-flowered annuals, and well deserves culture. It generally blooms in August, and lasts fully three months in beauty, or until cut down by frost. B.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Bedding Plants from Seed.—Some of your correspondents would oblige me very much if they would tell me of some good bedding plants that can be raised from seed in the spring, as I have a large flower garden compared with the size of my greenhouse. Also please mention which of the bedding plants can be kept through the winter in an ordinary cold frame.—G. S. M.

Mutisias in Cultivation.—I am pleased to learn that some of the Mutisias are not so rare in gardens as I supposed, and I am much obliged to Mr. Ellacombe for his note on the subject (see p. 167). I have also heard from Mr. W. E. Gumbleton that he has M. decurrens growing well at Belgrove.—W. B. HEMSLEY.

A Good Pyrethrum.—The best variety of Pyrethrum roseum which we ("Florist") have seen bears the name of Haage et Schmidt; it has full double flower-heads, the florets of which are symmetrically disposed, of a deep crimson, somewhat paler towards the centre. When well grown, it is a very excellent and showy sort. Messrs. Rollisson & Sons lately showed it in fine bloom at Manchester.

Ageratum Snowflake.—Between the white Pelargonium on the one hand and the white Lobelia and Verbena on the other, a medium-sized plant has long been required, combining a compact and dwarf growth with the desired succession of bloom, and exempt from disease when subjected to the vicissitudes of a cold or adverse English summer. This plant is well adapted to meet these requirements. The varieties of dwarf bedding Ageratums, hitherto offered as white-flowered, have proved but very indifferent, pale-coloured sorts, utterly failing to produce the effect sought for. Snowflake is a good white, and yields a succession of bloom until October. Ageratum Tom Thumb Snowflake is similar to the above, but a dwarfer and smaller-habited plant.

COTTAGE GARDENING.

By E. HOBDAY.

Fruit Culture.

This is a matter in which the whole nation is interested as consumers, if not as cultivators. Some have an idea that beyond a few Gooseberry or Currant bushes it is absurd for a cottager to attempt to grow fruit, but I fail to see why every man who has ground enough to plant half-a-dozen Apple trees should not do so; in fact, I should like to see every cottage gardener turn his attention more than is now done to fruit culture, not only to supply the wants of his family, but also where favourably situated for the purpose of adding to his income. There is hardly a cottage that has not bare spaces on its walls, which might be turned to profitable account in this way. The best aspects would suit Apricots, Peaches, and Grapes, the inferior ones Plums and Pears, whilst the north sides would produce Morello Cherries that would find a ready sale at remunerative prices, and the Morello Cherry rarely fails, even in the most unfavourable seasons, to produce a crop. It should be borne in mind that the walls of a cottage are warmer and better adapted for fruit culture than an unprotected garden wall. If all the bare places on cottage walls, in suitable situations, were clothed with fruit trees, the value of the produce in a few years would be something enormous. There is nothing chimerical in this: in some districts many cottagers do sell considerable quantities of fruit from their gardens, and there is no reason why every cottager, who has a good garden, should not do so if well and perseveringly attended to; but there is one great drawback to men of slender means planting fruit trees. The moment a tree is planted the planter, if an ordinary tenant, loses all right of property in it. It is not like a crop that can be planted and gathered in one or even two years; you must wait a long time before fruit trees become profitable, and then perhaps some other person may step in and reap the benefit. Some owners of cottage property do, I know, supply their tenants with young fruit trees when applied for, and much, very much more might be done in this direction. If fruit trees are to be systematically grown at all, it must be done with the assistance of the landlord in the first instance, and even in that case the benefit would not be all on the side of the tenant. A garden well laid out, and planted with suitable fruit trees, will always command a higher rent than one without them. The landlord, too, could do this better than the tenant, even if the latter were able and willing to do it, as he would most likely be in a position to obtain the best information as to the most suitable varieties to plant in that particular district. No doubt our climate is a difficult one, but even in the worst seasons some trees will produce and ripen a crop.

The Apple.

Apart from the incongruity of their appearance, tall standard trees are not the most profitable for planting in small gardens. The main objections to them are:—They shade injuriously a very large space; if the situation be at all exposed, a quantity of the fruit is blown down by the wind before it is fit to gather; and, lastly, the length of time before the trees come into bearing. There may be positions where a few tall trees may be advantageously planted; against such I have no objections to urge, but to their general adoption to the exclusion of other forms, I take exception. The espalier form of training is, in my opinion, especially adapted for small gardens; it seems to me to possess all the advantages of both dwarf trees and tall standards without any of their disadvantages. The fruit grown on trees trained as espaliers is always of superior quality; they occupy, in comparison with other forms, but little space; they may be cropped down to the ground, and they may at the same time ascend any reasonable height into the air; the wind does not injuriously affect them either by blowing down the fruit or bruising it by friction against each other; and by comparison with other trees, if well managed, their shade is not so injurious to other crops growing near them. I should, therefore, strongly advise the espalier system for the growth of Apple trees, not to the utter condemnation of either the dwarf or standard form (for I believe there are places where each and all may be planted), but I have a firm conviction that the main reliance for a good crop of Apples should be placed upon trees trained in the espalier form. In the first place, the horizontal mode of training is the best as regards Apples and Pears, for repressing undue vigour, and producing early fruitfulness, as early at least as is consistent with the quick furnishing of the wires. No great amount of skill is necessary to master the details of culture, as they consist principally in tying the main shoots to the wires, and summer pinching or pruning. Supposing that maiden trees be planted in autumn, which is the best time for planting, about 14 ft. or 15 ft. apart is a good distance for most kinds on the Crab stock on a fair Apple-growing soil; the espalier wires should be 5 ft., but not more than 6 ft. high. The young trees should be cut back in the spring to within an inch or so of the bottom wire, which may be about 6 in. or 8 in. from the ground. At the point where headed down three of the best placed shoots should be selected for training, one on each side to occupy the bottom wires, and the other as the main leader trained perpendicularly; all other growths to be pinched back to three or four leaves. During the summer the young shoots must be tied in as they progress towards their full length; at the winter pruning the main or perpendicular leader must be cut back to the second wire, and in the spring another pair of branches will have started on the second wire, when the main leader should be taken up perpendicularly as before. This process must be repeated annually until all the wires are furnished, and will enable the bottom of the tree to get a good start in advance of the top. Were it otherwise, from the tendency of the sap to flow upwards, there would be a difficulty in furnishing the bottom wires well with fruit. If the espaliers be 5 ft. high, and the individual wires 9 in. apart, there would be room for seven branches on each side, which would give plenty of room for the development and growth of the fruit.

Planting.—Apples will thrive well on any good loamy soil on a bottom either naturally dry (that is, with no stagnant water in it) or artificially drained; on a bad sub-soil, whether hungry gravel or cold clay, the bottom of the hole should be made impervious to the roots before planting, and the trees planted upon a slight mound. Where the soil is suitable, all the preparation required is to trench it up 2 ft. deep, and thoroughly break it up and intermix it. Manures, if applied at all, are better given in the shape of top-dressings when the trees come into bearing, so as to keep the roots near the surface. Where the sub-soil is unfavourable some expedient should be adopted to keep the roots out of it, either by spreading a barrowful of concrete over the bottom of the hole, 1 ft. 8 in. or 2 ft. from the surface, or paving the bottom with bricks or tiles, in order to give the roots a horizontal direction. All trenching should be done in September if possible, so as to give time for the ground to settle before planting. If at all loose the bottom of the hole should be well trodden just previously to the tree being planted. All fruit trees succeed best in a firm soil; and all planting should be completed by the end of November. Mulch with short litter or manure for 2 ft. or so round the bole of the tree as soon as the planting is finished. By early autumn-planting much time is gained, and the trees are in a good condition for heading down as soon as the sap begins to move in spring. If the planting be delayed till February or March, it would be better to leave the tops uncut till the following winter, especially if the roots have been mutilated in lifting them. Much care and judgment will be necessary in the selection of the trees, for it is preferable to plant half-a-dozen trees of a kind known to thrive well in the neighbourhood than to plant a number of sorts about the suitability of which for the soil little or nothing is known. This, of course, needs not preclude any one from trying a new sort occasionally; and as it is important for the trees to be true to name, select them from some respectable nursery in preference to buying them in a market.

Dwarf Apples.—Where the expense of espaliers would be too great, or where it is desirable, from the shallow, unsatisfactory nature of the soil, to plant dwarf trees grafted on a surface-rooting stock, such as is now commonly used by many of our principal nurserymen, the ground and the hole should be prepared in the same way as just recommended for espaliers; and if a barrowful or so of better soil could be added in which to plant each tree, it would be found of great advantage for giving them a start. As regards the distance to plant them apart,

something would depend upon the kind of training adopted. A simple and good mode of training is to drive in three stout stakes at equal distances round each tree and 1½ ft. from it, leaving the tops of the stakes, when firmly driven into the ground, about level with the part of the trunk of the tree whence the branches spring. An iron wire ring or hoop should then be fastened by small staples to the tops of the stakes; the trees should be headed back so as to get a sufficient number of shoots to break away to form the outer tier of branches. About eight or nine will suffice, and the shoots must be trained out horizontally at equal distances, when young, as far as the iron ring, and then trained up vertically. Always, in pruning trees that are not sufficiently furnished with branches, cut to a bud pointing in the direction to which the future branch is required to grow. This mode of training makes dwarf handsome trees that will bear well, and if a bit of land could be devoted to the culture of dwarf Apples on the Paradise stock, or Pears on the Quince stock, a most interesting and profitable plantation would be established. A piece of land 20 ft. square will, at 5 ft. apart, hold sixteen trees; and if not more than four or five of the most suitable kinds be planted, the chances of success will be greater than if any attempt be made at forming a collection. But do not dig amongst them with the spade, for it ruins trees grafted on a surface-rooting stock. The hoe should be freely used, and the spaces between the trees pointed over with a fork in February after the requisite winter pruning has been completed.

Summer Pruning.—In the case of espaliers, or indeed any other trained or restricted fruit trees, summer pruning or pinching assumes very great importance, from the power and control it gives the cultivator over the trees. Should the bottom branches of the trees show any signs of weakness, leave them unpinched for a season or two, but pinch more closely and assiduously the stronger-growing parts, to divert the flow of sap into the weaker parts. By pinching the growing shoots of trees the flow of sap may be turned in any direction in the same way that the flow of water can be regulated by a tap attached to a water-pipe. Pinching a shoot stops the flow, whilst leaving it unpinched encourages the flow in that direction. The question of summer pinching is deserving of very close study, not only in its application to fruit trees generally, but the best mode of treating each particular tree should be separately considered. There is too much variation in the strength of fruit trees to permit all to be treated exactly alike, without in some cases causing derangement in the health of the trees; for whilst the strong grower must be repressed, it may be necessary to leave the weakly one untouched, and even by further means to encourage growth. Pinching, quite as much as root-pruning, enables the growing power to be repressed, and in a more natural and less hurtful way, because the check can be given gradually and at the right time. In most cases summer pruning is delayed too long, often till the young shoots are 1 ft. or more long, and are getting firm at the base, and then, perhaps, they are cut back to three or four buds. But during the time of this rapid extension of wood the roots have felt the stimulating effect of so much foliage, and as in many cases cultivation is carried on almost up to the trunks of the trees the roots have no chance but to strike downwards; and as this occurs year after year the system of the tree gets out of order and refuses to bear fruit or blossoms, and of course when that condition is arrived at the only remedy is to lift, root-prune, and re-plant; but if the growth had been attended to earlier, a regular steady root-action would have been carried on in proportion to the growth, for there is always a reciprocity of action between roots and branches, and when the latter are encouraged or allowed to extend themselves, the roots, to meet the heavy demand made upon them, must descend into the moist subsoil; and when that takes place, nothing but watery unripe wood will be produced till the tree is lifted out of the cold stratum, and its roots brought back nearer to the surface. In the meantime there is a season or two lost, and there is a possibility of the roots being trimmed in too much, and then the tree will require a year or two to recover its proper healthy and vigorous tone. In dealing with a well-balanced tree, the most reasonable way of proceeding would be to commence pinching when the longest shoots had grown 7 in. or 8 in., and shorten them back to five or six buds, going over them at intervals of three or four days until all were pinched or shortened back, making the time extend over three or four weeks. In this way no undue pressure would be placed on the roots, and the tree would be maintained in a healthy and vigorous state through both roots and branches; the sap that ran to waste in watery spray would be diverted into forming fruit-buds, and an early fruit-bearing habit formed that would tend still further to check any undue development of useless wood. When summer pinching is intelligently and well carried out, there is only in extreme cases any necessity to resort to root-pruning.

Thinning the Fruit.—The importance of this cannot be overrated. I am convinced that the cause of unfruitfulness in some seasons is not altogether due to frost; hence there is an advantage in growing trees of a moderate size. To thin the fruit on tall standard trees would in most places be impossible; and thus every three or four years, on the average, there is an abundant crop, sometimes so abundant that only the finest fruit will pay for gathering. But the exhausted trees after such an effort must have time to recover their strength, and this alone, without any reference to the ungeniality of our spring, would account in many cases for blossoms falling off and refusing to set, and for the young fruit falling off after setting. A weakened or exhausted tree has not the power to resist ungenial influences. The blossoms are weak and often imperfectly developed, and are ill adapted to meet the extremes of temperature frequently occurring in the spring of the year. With dwarf trees or espaliers this ought not to be, for the thinning of the fruit might be easily accomplished, leaving one only where three or four are usually growing in a prolific season; thus the fruit-bearing power of the trees would be maintained in a regular state, and a moderate crop of fair-sized fruit every year would pay better than to have the trees overladen during a year of plenty, when the fruit will scarcely pay for the labour of gathering.

PLUM CROP IN THE EASTERN COUNTIES.

With one or two exceptions the Plum crop in this district is deficient; at least, after a hasty run through Norfolk and Suffolk, and parts of Essex, Cambridgeshire, and Bedfordshire, I have come to that conclusion. At Somerleyton, near Lowestoft, however, the Plum crop is good, that of the Victoria being heavy; and in our own orchard Plums are also a fair crop. Our orchard is situated on light, sandy, stony loam above broken flints and chalk, the broken flints in some spots predominating to a great extent. Such unsuitable soil has been rendered fit for fruit-growing by deep cultivation, and by very liberal supplies of farm-yard manure and clay, as well as annually picking off all the stones which, in the course of cultivation, are brought to the surface. Some of the trees, now about twenty-five years old, are in the most robust health, and produce annually good crops of handsome fruit. A specimen tree of every kind of hardy fruit grown in our nursery is planted here. Of Plums, the following from among those planted about twenty-five years ago, have crops on them this season. On Angelina Burdett, a medium-sized tree, there are a few fine fruit. Belgian Purple, a large healthy tree on the common Plum stock, is carrying a very heavy crop of large and fine fruit; this tree has borne large crops for years past. Blue Perdrigon with us is the earliest of all Plums; it forms a good-sized, healthy tree on the Brussels Stock, and has borne a heavy crop, which is all gathered. Coe's Late Red, on the common Plum, has about half a crop; on Cox's Emperor, a fine healthy tree on the Mussel stock, there is a good crop of fine fruit just commencing to colour; on Dillistone's Dwarf Prolific, a large spreading tree on the Brussels stock, there is a fair crop. Goliath, an unhealthy tree on the common Plum, is bearing half a crop; on a Green Gage, a large healthy tree on the Mirabelle, there is about one-third of a crop; of Hobbard's Early Prolific we have a good-sized, healthy tree on the Brussels stock; this sort follows the Blue Perdrigon, and is some days earlier than Rivers' Early Prolific; it has produced a good crop, which is all gathered. On King of Plums, a large healthy tree on a seedling Plum, there is a heavy crop. La Delicieuse, a strong vigorous tree on the common Plum, is bearing about half a crop; during the two previous seasons this has produced more fruit than leaves. On Mammoth Green Gage, a large healthy tree on the Mirabelle, there is a light crop. New Hybrid Green Gage, a small tree on the Brussels stock, is producing a fair crop of large fruit; this kind has borne heavily for years. On Orleans, a medium-sized tree on the

Black Damascus Stock, there is about half a crop. Pond's Seedling, a medium-sized healthy tree on the common Plum, is producing a light crop of fine fruit; this tree bore heavily last season. On Prince of Wales, a good-sized tree on the common Plum; heavy crop of fruit. Queen Mother, a large healthy tree, is bearing a small crop; on Reine Claude Violette or Purple Gage, a large healthy tree on the Mirabelle, there is a fair crop. St. Catherine, a large healthy tree, is bearing about half a crop; on Standard of England, a small tree, there is a heavy crop. Violet, a medium-sized healthy tree on the common Plum, is carrying about a third of a crop. Washington, a large healthy tree on the common Plum, has about half a crop of very fine fruit. Wheat or Harvest Plum is bearing about half a crop; on the White Magnum Bonum on the Brussels stock, a tree which was overloaded during the two previous seasons, there is about half a crop; and on Woolston Black Gage, a fine healthy tree on the common Plum, the crop is light.—J. Ewing, *Eaton, near Norwich.*

THE IMPORTANCE OF MULCHING.

Mulching is an important operation in East Anglia. Here drought is an annual occurrence; but this year it set in earlier than usual, and since the Potatoes were planted there has not been sufficient rain to reach their roots; nevertheless we do not feel the evil effects of drought so much as is experienced in those counties in which the annual rainfall is usually much greater, and for this reason—we provide as far as possible against it by mulching heavily every thing that can possibly be treated in that way, watering in a season like the present being a hopeless task. In the first place we have discontinued digging or forking amongst Gooseberries, Currants, Raspberries, and dwarf fruit trees, and in place thereof, as soon as the winter pruning is completed, we apply a good dressing of old hot-bed or farm-yard manure at least 3 in. thick and more if possible, spreading it evenly over the surface. All outside Vine borders get a heavy dressing of pig or cow-yard manure. Strawberry beds, too, are heavily dressed early in winter with partly decayed manure, which not only protects the crowns from injury by frost, but stimulates growth when required. The beds are likewise again mulched with stable litter when the Strawberries are coming into flower, and the mulching protects the roots from drought, and after being washed by rain keeps the fruit clean and dry. All wall fruit trees receive a mulching 4 ft. wide, measuring from the wall, as soon as the fruit is set; and in the case of Peaches, Nectarines, and Apricots this is extended according to the season, using as mulching any thing that will break the sun's rays and retain moisture. As regards vegetables, we have annually continued to extend the practice of mulching until more manure is used in this manner than is dug into the soil. Peas being an important crop, we sow all mid-season and late ones in trenches prepared as for Celery with good rotten manure dug into them, and as soon as the Peas are up and staked, we fill the sides of the trench full of partly decayed manure, when one thorough soaking of water will keep them in a growing condition for a considerable period, however hot and dry the season may be. All summer and autumn Cauliflowers, French Beans, Scarlet Runners, and other crops are treated in a similar manner, which greatly reduces the number of applicants for the watering-pot, and allows salad and other dwarf plants, that cannot conveniently be mulched, to have more effectual and unremitting attention. From the flower garden we might as well discard Verbenas, Calceolarias, and similar moisture-loving subjects as attempt to grow them without mulching; but by doing this effectually early in the season, and getting the beds thoroughly covered with foliage, the drought has no effect on them. When water is applied, we give as much as will soak away two and sometimes three days in succession, as I regard surface-watering as worse than useless.

Henham Hall, Suffolk. J. Groom.

A Leaf-gathering Machine Wanted.—I am desirous of ascertaining whether it is possible to procure a machine suitable for brushing up and collecting dead leaves, &c., from lawns. When the trees begin to shed their leaves in the autumn the labour of keeping lawns tidy is almost endless, and brushing them by hand is a very slow operation. Now that the Grass is cut by machinery, one would imagine it would not be very difficult to invent a brushing machine to be drawn by a pony that would do the work of clearing the Grass from dead leaves much quicker than it can be done by manual labour. Are you aware of such an affair having been ever attempted?—Inquirer.

PLATE XXXV.

A GRACEFUL WALL OR ROCK SHRUB.

DESMODIUM PENDULIFLORUM (LESPEDEZA BICOLOR VAR. SIEBOLDII.)

By W. B. Hemsley.

This shrub has been in our gardens for some years, but hitherto no portrait of it has appeared in any English publication, though it is a very ornamental and a perfectly hardy subject. In looking up what information I could respecting it, I was unable to identify it with any of the dried specimens of Desmodium at Kew, either from China or Japan; and on representing this to my friend Mr. Baker, who has lately described the Leguminosæ for the "Flora of India," he suggested that it might be a Lespedeza. Acting on this suggestion I compared it with the Lespedezas, and finding it so much like L. Sieboldii of Miquel, I procured fresh specimens to determine the point, and on opening several young pods I found only one seed in each pod. This is one of the principal characters of the genus Lespedeza, and one that excludes our plant from Desmodium. Moreover, the whole history of the plant points to the correctness of this view. The first figure of it appeared in the "Flore des Serres," and the writer of the description says that it appears to be the same as Desmodium racemosum of De Candolle; but Dr. Oudemans, discovering some difference in habit, &c., gave it the name of D. penduliflorum. Now De Candolle's racemosum is said to be the same as Thunberg's Hedysarum racemosum, which Miquel also quotes under his Lespedeza Sieboldii. Lespedeza bicolor is widely dispersed in Japan and North China up to the Amur River, and varies very much in habit, in the shape and size of the leaves, and in the length of the flower-spikes, and therefore I follow Maximowicz in regarding Sieboldii as a variety of it. And both the dried specimens and the living plants at Kew exhibit a wide range of variation. The flower-spikes are either short and nearly erect, or very long and pendent, sometimes twice as long as those in the figure, and sometimes not more than half as long. In habit, too, there is considerable difference, the stems being sufficiently stout to stand erect, or slender as in our variety, and requiring some support. Against a wall or with slight wire stakes it forms a very attractive sight when in full flower, or if allowed to ramble over rockwork. It also succeeds well if treated as an herbaceous plant and cut down to the ground every year. Carrière, writing on it in the "Revue Horticole" in 1873, says that it is perfectly hardy in Paris, not suffering the least injury even in the most severe winters, and I have known it as such for several years. The same plant is in this country under the name of Desmodium japonicum.

[We noticed a thrifty young stock of this plant in Messrs. Lee's Nurseries at Isleworth the other day; it is also probably obtainable in various other nurseries. It deserves general cultivation, especially where ornamental wall or rock shrubs are sought for. It would also prove an elegant subject for trellis work, the sides of covered ways, and the like. Our plate was prepared long before Mr. Hemsley furnished his description, hence we cannot follow his nomenclature on the coloured plate. In any case, however, the garden name by which it is known will probably be used for some time.]

Growing Mutisia decurrens.—This showy Gazania-like plant is found to be hardy at Floors Castle, growing on a south-west wall, where it has flowered every season for the last five or six years. Mr. Knight recommends, according to "The Florist," that it should be planted more freely than it is, especially where conservatory walls have to be furnished. Mr. Coleman, of Eastnor, advises people to plant it in the open ground. Some years ago he procured a plant which was trained against a south wall, but finding the situation too hot and dry, he removed it to an open space in the grounds, where it grew vigorously, flowered profusely, and ripened seeds from which young plants were raised. Against a wall, with him, the old leaves and stems assume a rusty appearance; but planted out in the open quarters, in a compost of peat and loam on a cool bottom, where it can ramble over rootwork or an old bush, it forms a striking object. It is impatient of close training, and well repays being left alone.

Supplement to *The Garden* [illegible] Covent Garden, London, W.C.

DESMODIUM PENDULIFLORUM

MY DIARY FOR SEVEN YEARS.

By W. DENNING.

Aug. 28.—*Sowing*—Radishes in frames to keep them from birds. *Potting*—About 170 pots of annuals, viz., 50 pots of Stocks, 50 pots of Phlox, and remainder of Tropæolums, Nemophila, and Lobelia. Potting up the Neapolitan Violets, taking them up with large balls. *Cuttings*—Putting in Datura (struck 20th September, should have been put in a month sooner); Hollyhocks, Achillea Clavenæ; layered Sensation Chrysanthemum and White Chrysanthemums. *Planting*——Fresh Vines, where any were doing badly. Planting Strawberry plants, viz., two beds of Keen's Seedling, one each of Garibaldi, President, Eclipse, Dr. Hogg, Oscar, Sir J. Paxton, Elton Pine, and Hautbois. *Miscellaneous*—Staking October Mignonette and Dendrobiums; tying pot Calceolarias; tying up Lettuce; putting netting up to Vinery; shifting Poinsettia cuttings into 48-sized pots; putting the Disas in shady pit; putting Oncidium superbum on fresh block; putting several Lilium lancifolium roseum under cover; putting Asters in pots under walls in shade; putting the Chysis into the Cattleya-house; shifting a few Sikkim Rhododendrons and Azaleas; earthing-up and watering latest planted Cauliflower; digging land for August-sown Lettuce; clearing Pea land for young Strawberry plants; giving all Celery a little earth to keep down suckers; cleaning last August-sown Cabbage stumps to make sprouts for winter; giving Lilies a top-dressing of manure; top-dressing the Gardenias with leaf-soil and sand; cleaning around Roses; cleaning among forcing plants in pots; weeding Watercress bed; Salvia fulgens and Zelinda Dahlia just beginning to make a show; Verbenas in good flower; making Vine pit ready for catch crop of Cucumbers; digging Potato land for Endive. Watering Peas, Celery, Radishes, and Beans under wall. Gathering Jargonelle Pears; taking up Garlic; getting in some of each sort of herb for drying; tying herbs up in papers, and hanging them up in kitchen. Salwey and Lord Palmerston now the only Peaches under glass; conservatory, Rose garden, ribbon borders, and both ends of terrace looking pretty well now.

Aug. 29.—*Sowing*—Bath Cos and Stanstead Lettuce. *Potting*—Cyclamens, also double Tree Violets; putting seedling Cinerarias into flowering pots. *Cuttings*—Put in of Coleus (conservatory sorts); Heliotrope; Ageratum; laying Cerastium in like Box edging for planting in spring; putting Iresine Lindeni in cold frame. *Planting*—Cucumbers in pot Vine pit, to crop well in October; filling up the Cabbage and Endive again where eaten by grubs. *Miscellaneous*—Shaking out and re-potting Pelargoniums; putting spring-sown Onions under glass to dry; staking and tying plants in conservatory preparatory to re-arranging; netting Green Gage Plums; finishing nailing summer wood on all wall trees; tying up and earthing some Endive; washing East Indian Orchids; giving all Celery a good watering; putting a 60-size potful of soot to one large can of water to some diseased Celery; sending in for use Devonshire Quarrenden Apples, Quetsche St. Martin and Washington Plums, Green Gage Plums and Figs, also Morello Cherries, and pickling Beans; gathering a few out-door Peaches, also Red Currants for stoneless jam; taking up for seed Ashleaf Kidney Potatoes (no use for eating after this period); would gather Williams' Bon Chrétien Pear about now according to season; putting autumn Onions under cover; making pots ready for sowing Mignonette for early spring; finishing clearing out flues; washing some of the dirty pots in Orchid-house.

Aug. 30.—*Cuttings*—Put in Carnations. *Planting*—Stocks on warm border. *Miscellaneous*—Finishing nailing Peach trees and exposing fruit; taking up Plantains on lawns; washing Saccolabiums, also Azaleas for thrips; exposing Peach fruits out-of-doors, and began syringing again every evening; gathering Green Gage Plums in orchard; getting up all Potatoes; putting manure in span-pit for winter Cucumber plants; clearing land for Strawberry plantation; making a Mushroom bed; picking off dead flowers in flower garden; tidying up flower-beds; pinching Perilla; pegging Ageratum; taking dead blossoms off Pelargoniums; clipping hedges; looking over East Indian Orchids for thrips; weeding walks; taking wasps' nests; clearing out drains.

Aug. 31.—*Sowing*—Mustard and Cress, also Cucumbers for early spring, say February; these were good by 20th December. Should sow again about 25th September. *Potting*—Iris, large-flowered sorts; also old cut down double Pelargoniums and remaining Lilacs; shaking out the Dendrobium sanguinolentum, roots all gone off—potting in very fibrous peat; shaking out Cologyne Cummingi, and looking over a few others basketed in Sphagnum. *Cuttings*—Put in another batch of Centaureas in single pots in cold frame. *Planting*—Digging land for and planting August-sown Incomparable and Imperial Cabbage. *Miscellaneous*—Tying up Yew trees. Netting some Coe's Golden Drop Plums. Parting some Aralias; putting the Solanums under glass; getting all stand plants set thinner on ashes. Washing Orchids in Dendrobium-house; watering all Peach trees inside. Peaches ripening fast in orchard-house, gathering every day; putting last year's pot bulbs in baskets to dry; pulling up some Cauliflower and putting them in cellar. Thinning autumn Carrots; keeping floors of Cattleya-house and Lycaste-house dry after dinner, as otherwise bulbs rot. Putting bottles up to catch wasps; looking over Cattleyas for thrips; tidying up flower-beds; cleaning up land; weeding walks.

September 1.—*Potting*—Schizanthus. *Cuttings*—Put in Catmint. *Miscellaneous*—Staking Heliotropes in pots; getting all Chrysanthemums tied as quickly as possible. Netting Peaches. Clearing out old material from Dendrobium Wardianum with syringe, and fresh mossing it; putting two Dendrobium Falconeri on tree Fern; shaking out an Odontoglossum nebulosum, no live roots, re-potted in Sphagnum Moss. Shifting spring-struck tree Carnations into 48-sized pots for flowering; putting Centaurea and also Lobelia seedlings into open pit; putting the Strawberry plants in pots a little thinner; shifting late Cucumbers into 10-in. pots. Syringing large Aerides with Tobacco-water for thrips. Gathering Apricots for preserving; also the last of the Morello Cherries and a large quantity of Apricots (ripening very rapidly and all at once); sending in some Kirk's Plum; gathering Keswick and Hawthornden Apples in kitchen garden, and began in orchard; getting autumn-sown Onions into root-room; pulling the whole of the spring Onions. Making hot-bed on which to plunge potted Neapolitan Violets; digging under hedges ready for Endive; sifting gravel; received bulbs; finishing Cucumber ridge in first winter house; clearing out a pit for last Cucumbers; getting manure put into heaps for another Mushroom bed. Pruning all young growth from first Vines; cutting off lateral shoots from one-year-old pot Vines; canes of early Vines hard and brown; Muscats all tinged. Finishing cutting Laurels; keeping Phalænopsis hotter, closer, and damper in the atmosphere, but no wetter at the roots; temperature about 80° by day, 75° by night, and 73° in the morning, fire-heat.

Sept. 2.—*Potting*—First Guernsey and Belladonna Lilies; got the Hollyhocks potted off; potting Brompton Stocks, also Pinks and Carnations; received a few Lilium auratum and most of the bulbs. *Cuttings*—Putting in Oxalis. *Planting*—A few Walcheren Cauliflowers; some July-sown Cabbage (should plant large quantities of this sowing); planting 1st of August-sown Bath Cos Lettuce. *Miscellaneous*—Staking latest-struck Fuchsias; tying up Asters; putting fresh Moss to Vanda cœrulea; putting Maxillaria venusta into Lycaste-house; putting all Brassias into Mexican-house in sun; shifting latest-sown Balsams; watering French Beans under wall; gathering Apples in orchard; out-door Peaches coming in nicely; putting some pots into a pit for Cucumber growing; digging land for Cabbage Lettuce; taking off young Strawberry plants; preparing pits for first Beans, Sir J. Paxton; wheeling some soil off Vinery border, putting a layer of manure on it, and covering it with fresh soil; thinning last-sown Mignonette; cutting off straggling shoots from Briers and Roses; looking for wasps' nests; whitewashing fruit-room; mending shades.

[It is necessary to point out that many of the operations included herein were carried out in gardens in Yorkshire, &c.; our readers will, therefore, understand that some of the operations recorded may vary according to locality. The usefulness of the diary or calendar to the entire country is therefore apparent; readers will do well to remember that the seasons may be said roughly to be ten days later in coming on and a week earlier in going off in the northern as compared with southern gardens.]

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Shanking of Grapes.—This is so often said to be brought about by a too wet condition of the soil, that amateurs are frequently led into the opposite extreme of keeping it too dry, a course which I believe causes more Grapes to shank than too much wet, especially during such seasons as the present, where amateurs' Vines are grown in a house that has to do duty for plants as well as Vines, and where the roots are frequently met with confined to the inside of the house, with often a portion of the floor tiled or flagged; they are in consequence dependent for moisture upon what water is given them; that which runs from the pot plants frequently proves deceptive, inasmuch as it makes the surface of the soil under the stages where the roots are appear wet, when in fact it is only just moist on the tops. Now when the Grapes are ripe, or nearly so, it is desirable to keep the atmosphere reasonably dry; but where the roots are placed inside in the way just named, sufficient water must be given to keep the soil in a healthy state, or the leaves will not retain their vitality so long as they ought; and this is the more necessary in the

case of Vines in such houses as those under consideration, by reason of the extent to which the shoots are allowed to run not being so great as where it was not needful to restrict the growth to admit light to the plants grown under them.

Peaches.—Where these are grown under glass with their roots occupying inside borders, they will need to be kept more moist even than Vines as long as they carry their leaves, for their roots are never quite at rest. On outside walls the black aphis is more than usually prevalent this autumn on both Peach and Cherry trees; as soon, therefore, as it makes its appearance the trees should be well washed with Tobacco or Quassia water, or dusted with Tobacco powder. I have seen this insect, which often appears in the autumn, left upon Peaches without molestation after the fruit was gathered under the impression that, coming so late, it could do no harm, but the premature destruction of the leaves which the fly causes has the effect of greatly diminishing both the number and strength of the flower-buds the following spring.

Newly-planted Strawberries must be attended to with water if the weather keep dry, or they will suffer to an extent that will greatly interfere with their bearing capabilities the ensuing season. The same applies to Strawberries in pots. Amateurs who like to grow a little of everything they can manage in their glass-houses, and who attempt the cultivation of Strawberries in pots, may rest assured that a good deal of their success depends on the plants being plentifully supplied with water so long as they are making any growth. Place them in the full sun on slates or boards in a square as close as the pots will stand; by this means they will protect each other from the full force of the sun, which, coming in contact with their sides whilst at all powerful, is injurious to the roots of any plant grown in pots.

Hollyhocks.—Since the disease has made such havoc amongst these, numbers of amateurs have been deterred from attempting their growth, but as the fungus that is the cause of the disease can be destroyed by the use of a sulphur-impregnated wash, many will be disposed to again try these best of shrubbery border subjects. Where they are increased by cuttings these should be put in at once; they will strike in an ordinary frame, if with a little bottom-heat all the better; but they must not be kept too close overhead. For convenience in moving about they are better struck singly in small pots; the soil should be moderately light and sandy.

Solanums.—Plants of S. capsicastrum and S. Pseudo-capsicum should now receive sufficient water at the roots, or the berries will not swell freely. Look over them closely from time to time in order to see that the leaves do not get affected with red spider, or this pest will quickly turn them quite yellow, after which they have an uninviting appearance. Where they are grown through the summer in pots they need much attention in this way to keep up the deep green colour of their foliage, which will be benefited by the use of manure water once or twice a week.

Salvias and Veronicas for flowering later in the season, and now set out-of-doors, will by this time have filled their pots with roots, and will require diligent attention in the way of watering; give them weak liquid stimulants twice a week; this is the more necessary if the pots which they occupy be small compared with the size of the plants. All such plants are better for being plunged through the summer, for in this way they do not need so much care in watering, nor are they so liable to suffer if unobservedly the soil get a little dry. In all cases, however, where plants are plunged, it is essential that the material in which they are thus placed should be such as will not harbour worms, or they will get in amongst the roots, especially when manure-water is used, for which they appear to have a particular liking, and even to strong-habited subjects like the above they soon do serious injury.

Cyclamens that have been somewhat at rest during the summer, and which have now commenced growing, should be re-potted, removing all the old soil, and replacing it with new material. Some prefer a peaty soil, others loam and leaf-mould, with some manure added in all cases, using sand enough to keep it sufficiently open; pot moderately firm, and do not give them overmuch room—an 8-inch pot will be found of sufficient size for a very large root; after potting, put them in a frame or pit, and keep them a little close, sprinkling them overhead in the afternoons of warm days. These plants, although generally looked upon as succeeding with ordinary greenhouse temperature, are better for being kept a few degrees warmer than is usual for many greenhouse subjects. Keep a constant eye upon them in order to see that they do not become affected with green fly, to which they are very liable; it gets unobserved on the under-sides of the leaves, and frequently before it is noticed so injures them as to do serious mischief to the plants, especially whilst the leaves are young. Fumigating or dipping will rid them of this insect.

Moving Shrubs.—It is not uncommon in amateurs' gardens to see shrubs which at first, when small, were planted close to give immediate effect, with a view to some being thinned out as they got larger, left until they spoil each other. If, in the first instance, the work were done with judgment, those which were intended to remain permanently will have been put in such position as will afford them enough room by simply moving the others of less value, which were only put in to fill up for a time; but it frequently happens that this course has not been followed, and that the planting has been done indiscriminately, in which case when they are grown so as to be too close, a portion has to be taken out, and many required to remain want moving more or less from the position in which they were first planted. Where removal of this kind becomes necessary, it should be carried out before the shrubs have grown into such a crowded state as to injure the whole, as frequently permitted; for, independent of the injury inflicted upon all, the longer moving is deferred, the worse condition they individually get into for removal. There is no time in the year when evergreens can be more successfully transplanted than from the end of August to the beginning of October; but the earlier in September the better; there is no necessity to wait for showery weather, not even if the soil be apparently so dry as to contain little moisture. In fact, the heat that is in it when in this state is one of the first requisites as regards success, on account of its assisting to promote the immediate formation of roots; whereas if removed late in autumn, when the temperature of both the air and earth is reduced by waning sun-heat and chilling autumn rains, all this advantage is lost. In planting, however, whilst the soil is in the dry condition above described, it is imperative that every plant should be thoroughly soaked with water when it is replanted. This should not be done by half measures; on the contrary, the whole of the soil that is put in round the roots down to the bottom of the hole should be effectually moistened. Where this is done the formation of new roots, as I have said, commences immediately, and this single thorough watering will generally be found sufficient. If any doubts be entertained as to roots being formed immediately after planting at this season, an inspection, say a month afterwards, will soon dispel them; for those who will take the trouble to look at the point of every root that has been severed will observe a quantity of young feeding fibres which will enable the plant to resist the most severe winter that may ensue, and ready to supply the demands made by spring growth. Each shrub, as soon as it is taken up, should be immediately re-planted, not allowing the roots to have time to dry; in this there must be no delay; indeed, this early removal is only to be recommended where shrubs can immediately be placed in the new positions assigned to them from one part of the garden or pleasure ground to another. Presuming that the surplus plants thus taken up will be again planted where more space can be found for them, ground for them should be prepared beforehand by sufficiently deep digging or trenching, so as to expedite the work.

Greenhouses.

The dry, parching winds that have prevailed of late, accompanied by brilliant sunshine, render it a matter of some difficulty to keep up anything like the necessary amount of atmospheric moisture to maintain the various kinds of plants in a healthy, growing state. While such weather continues every effort must be made to counteract its effects as far as possible by well wetting the under part of the stages amongst the pots, and indeed every part of the house where water can be used without being objectionable. Much watchfulness will likewise be requisite to see that hard-wooded plants do not become dry at the roots, to prevent which they should now be looked over both morning and evening. Azaleas, especially, will require much attention in this respect, as they now take up great quantities of water, and any deficiency as regards moisture is sure to show itself in the small size and paucity of the flowers when the season arrives for them to be produced. Where any are found to have thrips on their leaves means should at once be taken to destroy them, or they will soon initiate themselves into the points of the shoots, and cause irreparable injury to the buds now forming. Although only a few of these pests may be observable now, they increase at such a rapid rate if left to themselves as to soon spread over a whole houseful of plants. In cases where these are of large size, so as not to admit of being readily handled, the best way to clear them of these destructive pests is to fumigate the house several evenings in succession with Tobacco, choosing a still, damp time for the operation, as then the laps of the glass are closed by the wet, and the means of escape for the smoke are thus cut off. The stock of autumn and winter-flowering plants will require unremitting attention, and preparation should at once be made to get in a sowing of Mignonette to come on early; 6-in or 8-in. pots are the handiest in which to grow it. The common Mig-

nonette is a mere weed compared with such kinds as the Large Crimson, Parsons' New White, pyramidalis gigantea, and others, any of which should be grown in preference to the above, the whole being much more robust, and producing spikes of bloom double the size of those of the old variety. Pots for Mignonette should be well drained, and over the crocks scatter a handful of fresh soot, or some pigeon manure, and then fill them up to within an inch of the top with some rough, fibry loam pressed firm. If the loam be at all dry, give a gentle watering with a fine-rosed pot, and then sow the seed regularly over the surface, covering the same with some finely sifted soil. The pots should then be placed where they can be protected from heavy rains, as Mignonette is very impatient of any excess of moisture, especially during the earlier stages of its growth; as for instance, just after the seeds germinate, when the whole frequently die off if the soil gets at all wet. Special care should therefore be taken to prevent this by placing the pots under cover, and only giving just sufficient water to keep the plants from flagging till they get a fair start. A pot or garden frame, where they can have full exposure, will suit them well for some time to come; but as soon as winter sets in they should be removed to light airy shelves in the greenhouse. Rhodanthe Manglesi is one of the most charming and useful plants it is possible to have for early spring blooming, seed of which for them to bloom at that time should be got in at once. Their lovely pink, satin-like flowers are always greatly admired, but they never show to so much advantage or get so fully appreciated as when cultivated in pots. The seed should be sown in a pan of light rich soil, which should then be kept close under glass till they germinate. As soon as large enough to handle, prick out into 60-sized pots, placing five or six plants in each equidistant apart, after which stand them in a frame, and keep them close and shaded for a few days to give them a start. Damp is their great enemy during the winter months, and to guard against this they must be carefully supplied with water so as not to wet them overhead or keep them too moist at the root. A shelf near the glass where they can have a free circulation of air is the best place to winter them, and at the turn of the year they should be gradually shifted on into larger pots, as they require more root-room. After that time they must have a moist, growing temperature, such as an intermediate house affords, and be grown on from then without check till they attain the desired size. The tendency of Rhodanthes to produce bloom is so great that unless they are liberally treated and pushed on by giving them every encouragement both as regards rich soil and a moist, warm atmosphere before the sun bears much power, it is almost impossible to get them of sufficient size to be really effective. In shifting them on they should therefore have a small portion of thoroughly rotten manure mixed with the leaf mould and loam in which they are potted, the latter of which should be in about equal proportions. By affording them a rich, stimulating soil of this kind, and giving them plenty of manure-water, 6-in. pots will be quite large enough to grow them in, a size that looks more suited to the habit of the plant than others of greater dimensions. Among fine-foliaged plants available for greenhouse or conservatory decoration Marantas should have a foremost place assigned them, as few plants are more highly prized or produce a better effect than these. They dislike sunshine or dry air, and, therefore, in arranging they should have the most favourable position that can be selected for them. Soft-wooded flowering plants, such as Balsams, Begonias, Petunias, Achimenes, Pelargoniums, &c., must not be allowed to suffer from lack of water, or they soon shed their bloom, and present a shabby appearance. The single Zonal Pelargoniums will be found to seed rather freely owing to the dry state of the atmosphere, and in order to prolong their flowering to the utmost, the whole of it should be picked off as soon as the petals fall, as seed-bearing is a great tax on the plants.

Stoves.

Such free-flowering plants as Bougainvillea glabra, Allamandas, and plants of that class having only a limited feeding ground through being grown in pots or planted in confined spaces, should now be liberally supplied with manure-water in order to enable them to continue blooming late in the autumn, a time when they will be of much more value than they are now. With such vigorous-growing plants as the above there need be no fear of exhaustion from keeping them in a flowering state too long, as with plenty of stimulating matter applied to the roots they may be had in bloom at least six months out of the twelve, and will start away again in the spring as freely as ever. A top-dressing of thoroughly decomposed manure, such as has been in use for mulching and Vine borders, may with advantage be laid over the soil so as to encourage surface roots, and obviate the necessity of having to water the plants so frequently.

Gardenias.—Young growing plants of these should now have a final shift so as to get them thoroughly established and the pots well filled with roots before autumn sets in. Nothing suits these so well as good, rough, fibry peat, with just sufficient sand in it to keep it open and porous in order that water, of which they like large quantities when growing, may pass freely through it. A pit or frame where they can be plunged in a bed of gently fermenting leaves or tan is the best place in which to grow them, as there they can be heavily syringed and shut up close early in the afternoon, a course of treatment that expedites growth and helps to keep them free from mealy bug, a pest to which they are unfortunately rather subject. Where any are infested with this troublesome pest the only remedy just now is hand-cleaning, as it will not be safe, owing to the soft state of both leaves and the tips of the shoots, to use any of the insecticides sufficiently strong to destroy them. Keep the plants well up to the light in order that the growth they make may be firm and mature, without which they do not flower at all freely. In the case of the best Gardenias which I ever saw the lights were withdrawn during a portion of the day, and on these seldom was an insect seen, while the leaves were of that rich, shining green so characteristic of a fine, healthy Gardenia.

Anthuriums.—No stove, however small, should be without an Anthurium or two, as few plants are more brilliant or effective than well-grown specimens of them when in bloom, or any flowers more lasting and useful in a cut state, as they may be preserved for weeks in that condition. The present is a very favourable time for repotting any plants of these requiring that attention. Use for this purpose rough lumps of fibry peat, first shaking out as much of the earthy matter as will leave by rubbing or shaking it in a sieve, after which add nearly the same bulk of Sphagnum and a little charcoal broken moderately small with a dash of silver sand to keep the whole porous and open. The pots for their reception should be well drained by placing a small inverted pot at the bottom to cover the hole, and then they should be nearly half filled with clean crocks. This preparation is of the greatest importance, for, although Anthuriums will take and require almost unlimited quantities of water, they dislike stagnant moisture, which soon causes their roots to rot, or renders the soil in such a sour state, that they will not lay hold of it. In potting keep the plants well up above the rims of the pots, so as to form a mound rising 2 in. or 3 in., according to the size of the plants to be potted.

Begonias of the winter-flowering class, such as B. nitida, B. insignis, B. manicata, and others, if required of large size, should at once have a shift, in order that they may finish their principal growth while there is plenty of sun to harden it. All such soft-wooded plants as these require as much light as can be given them from this time onwards, and they may therefore be placed with advantage on shelves, or other positions close to the glass, where they must be well looked after as regards water, of which Begonias of the above type can scarcely at this season have too much, especially if confined to small pots. Where this is the case they should have liquid manure at least twice a week, which will keep the leaves as good in colour and assist the plants in producing a fine head of bloom.

Table Plants.—Where small subjects are in request for table decoration early in summer, no better or more striking plants can be had for the purpose than some of the Nidulariums, such as N. fulgens and N. splendens, which, from their dwarf, compact character, and the brilliant colour of their central leaves, are particularly adapted for the purpose. As these will now have ceased blooming, and will have lost much of their colour, the old plants should be discarded as soon as suckers can be obtained, which they produce freely at their sides. These should be slipped off with as much of the old stem adhering to them as can fairly be got, and after pruning the ragged part away at the bottom, they should be inserted in 6-in. pots, burying the stems up to the bottom leaves; if kept close they will soon root, and form plants by next season quite equal in every respect to those from which they were taken. Being epiphytal in character, the pots must be well drained, and the soil used should be rough and porous, such as lumps of fibry peat, with plenty of sand to keep it open. The elegantly-marked Tillandsia zebrina and T. musaica are equally valuable for the same purpose; the latter especially is a singularly beautiful plant that ought to be in every stove. The leaves are about 1 ft. long and 2 in. wide, the ground colour being pale yellowish-green, marked or veined irregularly across with rich dark veins on both the upper and under side, the latter being of a dullish red colour. Tillandsias are plants of easy cultivation, requiring much the same treatment as to soil, potting, watering, &c., as the Nidulariums, which they resemble in habit.

Æchmeas. — These are also a useful class of plants, which, throwing up, as they do, their flower-stems well above the leaves, are valuable as decorative plants. From their comparatively hardy nature, they will stand a long time when in bloom in the conservatory or other cool house, where they are sure to form very conspicuous

objects. The side shoots or suckers of these will now be in a fit state to separate from the parent plants; they should be slipped off or divided in the same way as is recommended for the Nidulariums, and they should be potted and treated in a similar manner.

Billbergias.—As flowering plants, nothing can exceed the beauty of some of these, especially the variety called B. Moreliana, a kind which produces its blooms in the freest manner possible during March and April, a time when such brilliant colours are exceedingly valuable. Unlike most of the Billbergias, the flower-spikes of B. Moreliana, instead of being very erect, droop gracefully over, hanging clear from the centre of the sucker producing them from 1 ft. to 1½ ft. in length, so that when the plant is elevated by being set on a bracket or inverted pot, or suspended in a basket, it produces a striking effect, as do also the long spikes of bloom when cut and placed in tall vases, so as to depend over their sides. Those who are not already in possession of this Billbergia should not fail to add it to their collections, as it is a plant that is sure to give satisfaction. Any of these Bromeliaceous plants obtained now will most likely be in a fit state to receive a shift; well drain the pots, and use rough lumpy peat and loam for the purpose, with just sufficient sand to keep it open and porous. None of the above-named plants care for much pot room; fresh sweet-oil and plenty of drainage being of more importance than a large quantity, which is more apt to become stagnant and sour, conditions under which they soon lose their roots, and of course get into bad health. When potted they must be grown freely on by keeping them in a moist atmosphere, where they can have plenty of heat.

Aphelandra cristata and A. Roezli are both useful winter-blooming plants, which should now receive a shift or be well fed with liquid manure, *i.e.*, if in pots sufficiently large already, and well filled with roots; watch closely for mealy bug, which is sure to attack them if there be any in the house. They are likewise very subject to red spider, which must be guarded against by frequent syringings, and growing the plants in an atmosphere well saturated with moisture. They must, however, have plenty of light, which may now be more freely admitted to most stove plants by affording less shade, in order to thoroughly mature the growth they are now making, without which but little bloom will be produced.

Coleuses.—These may be grown up so quickly that it it is never worth while wintering any but very small plants or cuttings of them, which should now be put in for that purpose. They will strike readily in any shady place in the stove under bell-glasses or hand-lights, put on to keep the air from them for a few days, when they can either be potted off singly, or kept in their cutting pots on a light shelf till the turn of the year.

Caladiums.—The earliest started plants of these should now be permitted to go gradually to rest by only giving them water occasionally at the roots. It is the practice with some to keep these slightly growing through the winter, but it is not to be recommended, as they never start in the vigorous way which they do when dried off and allowed to go completely to rest.

Balsams.—Push on the last batch of these by closing early, after giving them a good syringing; and, in order to keep them dwarf and stocky, they should be kept thin and well up to the glass, so as to admit plenty of light amongst them. Such sportive plants as Balsams are sure to show great variety both in the colour, size, and quality of the flowers; and to keep up a high standard of excellence with these, it is necessary to make selections of the best and most distinct to be set away from the others for the purpose of bearing seed. If the flowers be so double as not to produce seed freely, remove a few of the inner petals, and fertilise the stigmas by hand, using a camel-hair brush for the purpose.

Any choice stove plants in the conservatory should now be watched as the nights lengthen and grow colder, and if any show the least signs of distress they should at once be removed to warmer quarters. Such subjects, however, as Allamandas, Stephanotis, Bougainvilleas, Dracænas, and the more hardy varieties, may with safety be left for at least another month to come, unless the weather should set in unusually cold, or the plants stand in an unfavourable position.—J. Sheppard, *Woolverstone Park.*

Orchids.

Since it has become known that the New Granada Odontoglossums succeed best in a comparatively cool temperature, many have thought that the whole genus Odontoglossum is hardier than it really is; although all Odontoglossums will succeed in a cool temperature when at rest, those that have not completed their growth when autumn sets in will not bear much cold. The term Odontoglossum-house is interpreted by many to mean a house in which the whole of the Odontoglossums may be grown together all the year round, but the low temperature which is maintained in that house renders it unfit for some varieties in autumn and winter, and if the temperature be raised to suit these it would be unfit for the kinds that come from New Granada. The amateur should, therefore, make himself acquainted with the native habitat of each variety, its time of growing, &c., and so manage it that it has the requisite amount of heat until its growth is finished, be it at whatever time of year it may. As a rule the whole of the Odontoglossums will thrive well together in a cool-house during the summer months, and keep cleaner than if they had been kept warmer; but on going over them at this season many of the Guatemalan and Mexican varieties will be found which have not nearly finished their growth, and these should be removed to the Cattleya-house until their pseudo-bulbs are matured, so as to ensure good flowering growth. The following is a list of some of the leading kinds of Odontoglossums, which would be benefited by a higher autumn and winter temperature than that given to the New Granada varieties, viz.:—O. hastilabium, O. Krameri, O. pulchellum, O. grande, O. Insleayi, O. Schleiperianum, O. Rossi, O. membranaceum, O. Bictoniense, O. Uro-Skinneri, O. Phalænopsis, O. Roezli, O. vexillarium, O. Warscewiczi, O. Reichenheimi, O. nebulosum, O. cordatum, and O. maculatum. These thrive better in a higher autumn and winter temperature than those of the O. Alexandræ class and others from high elevations, and which at all times live in a drier atmosphere; they are very impatient of stagnant moisture, and do not like to be syringed. The New Granada Odontoglossums should still be freely supplied with water; indeed, they should not be allowed at any time to get quite dry; air should be admitted to them day and night, and every pains taken to keep them free from the yellow aphis, which, when the plants are grown in a proper temperature, is the only insect which attacks them to any extent. Whenever these are seen they should be cleared off by means of a sponge and clean water, for they will increase rapidly and do much damage, the full extent of which will not be discovered until the leaves have attained their full size. James O'Brien.

The Potato Crop and the Drought.—Potatoes are generally a light crop this year, but free from disease. This is my experience of all kinds treated in the ordinary manner, viz., planted on well dug land in good condition. I have, however, just lifted some single rows of several varieties, both old and new, that were planted between rows of young Gooseberry bushes, for which the soil was trenched 3 ft. deep last autumn, using a great deal of manure at the bottom of the trenches, and in this case the crop is as heavy as I ever remember to have seen it, and of the very best quality. Thus the value of trenching in dry seasons is fully apparent, and the earlier it is done the better, for if left until the days lengthen in spring the press of work often precludes its being done. Late in autumn or early in winter are the best periods at which such work should be performed.—J. Groom, *Henham.*

Sowing Lettuces.—Some difficulty is often experienced in keeping up a continuous supply of Lettuces during the summer months. This often arises from the seed, in time of drought, not coming up well. It often gets killed just at the period of germination, or the ground getting thoroughly dry, the seed refuses to swell until rainy weather sets in. Seed which should come up in a few days will frequently lie a fortnight in the ground, and then only partially come up, thereby causing a serious break in the supply. By the following plan of sowing in hot weather, I find the young plants always come up well:—Draw a drill some 3 in. in depth, and give it a good soaking with water; then sow the seed, and cover it with soil, making it firm; cover the whole with some mulch or old mats. In this manner every seed, if good, will come up; if the seed be soaked some four hours before sowing, its germination will be accelerated considerably. Attention must be given to remove the covering as soon as the plants appear. Do not transplant, but merely thin out to the required distance apart. Drill sowing will enable a good soaking of water to be given when necessary. In this way, by sowing every ten days, a constant succession of salading may be maintained, let the season be what it may.—J. Cornhill, *Byfleet.*

The Shah Pea.—Mr. Laxton sent me in spring three or four kinds of his seedling Peas for trial, all of which were sown on the 13th of June. The one named The Shah promises to be the earliest Pea known; sown on the above date fine pods of it were gathered on the 25th July, being exactly six weeks from the date of sowing.—W. Wildsmith, *Heckfield.*

The Cucumber Marrow.—Under this designation, I am now growing a variety of the Vegetable Marrow received last spring from M. Jean Sisley, of Lyons. In all respects it resembles our long white market Marrow, except in colour, which is of a deep speckled green. As white Marrows are most favoured here, it is not likely to become very acceptable on this side of the Channel.—A. D.

THE FRUIT GARDEN.

PRUNING BEARING ORCHARDS.

Trees which are kept in good shape while young will not be likely to need much pruning when they become much older. Rubbing off with the fingers a small green supernumerary shoot in time will save the trouble of sawing off a large limb in after years. But it is not often that orchards receive this perfect management; the owner is sometimes absent from home, or pressed with other cares at the time when the pruning should be performed, and needless branches and dense bushy tops are the result. As the trees become still older

Fig. 1.

Fig. 2.

the time required to cut away what is not wanted and is detrimental continues to prevent the owner from giving attention to the subject, and he does not like to commit the work to a blundering labourer. We have adopted a practice by which any one may prune an orchard of the most valuable trees with as much accuracy and skill as it could be done by the best horticulturist, or by the owner standing by and directing every motion. We can do it even better, because any one can mark out work to greater advantage if he has but one object in view than if his attention be distracted. We pass along the rows of trees, and with a piece of chalk draw a line at the base of any limb requiring removal at the exact place where the workman is to set in his saw or knife, as shown in *a* fig. 1. With this before us, we can do better than if constantly compelled to

Fig. 3.

Fig. 4.

cut and then look, and cut and look continually. And we can thus point out to the man who has the saw the exact spot for cutting much better than to stand by and continue to give verbal directions. The owner may thus lay out in half-an-hour work enough to keep a pruner busy for half a day, and he needs no watching, for he cannot go wrong. It usually happens that the limbs in a bearing orchard are beyond the ordinary reach of chalk in hand. In this case we attach the chalk to a slender pole, as shown in the accompanying figure. We find the small chalk cylinders used for blackboard exercises in schools the most convenient in this case. A round slender rod, several feet in length, is procured, the smaller end of which is of the same size as the chalk cylinder. A strip of pasteboard is wound around this end and secured by a cord, and projects an inch or two beyond the end of the stick. In the pasteboard tube thus formed the chalk is inserted, so that the end only projects, as shown in fig. 2, or more at length in fig. 3. The marker is now ready for work. As the chalk wears away in marking the paste-board tube is slipped down a little, and thus it is ready for marking till all is worn away, when another replaces it. Fig. 3 is this marker on a smaller scale. This contrivance answers perfectly for all smooth-barked trees, and we have found it a great convenience in pruning large neglected Pear orchards. But when the bark is rough and the limbs large, as in many Apple orchards, common coarse chalk will be found to answer best. This may be inserted in a slender forked stick or pole by shaving away a shallow groove on each side of the chalk where it is to fit into the fork, and tying it there, as shown in fig. 4. In pruning trees it is desirable to give them an even, symmetrical head, with branches not too crowded, and evenly distributed over every part; special care, too, must be taken to avoid the common error of thinning out in the middle or interior of the head, and leaving the smaller branches a dense mass over the outside. It is better to thin in from the outside where thinning is needed. But where this is not the case there will be occasionally in nearly all orchards crooked or crossing limbs that can be profitably spared.—"Country Gentleman."

Screens for Orchards.—A writer in the Albany "Country Gentleman" endeavours to show that timber screens are hurtful to orchards, and he states the fact that on the bleak bluffs of Lake Michigan, Peach trees stood through the winter unharmed, while in the same winter the same kind of trees on level land, protected by forest trees, all died. Here is an example where results are ascribed to wrong causes. The Peach trees on the bluffs had a dry bottom, and the soil was such as to favour a moderate growth and a well-ripened and hardened wood. On the level land the soil was probably more moist, the worst that could be selected for Peach trees, where even the protection of the timber trees could not save them. It often happens that in addition to the unfavourable effects of a low, wet soil, which causes the trees to grow so late that they do not ripen their wood, the temperature is colder in low places than on hills, the cold air settling in valleys on sharp frosty nights, and possibly this may have been an additional cause in the case mentioned. Tree screens have sometimes been objected to by those who have planted immediately under their shade. The beneficial influence of protection against winds usually extends from fifteen to twenty times the height of the screen, and there is no necessity of planting close to them.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Irish Peach as a Cooking Apple.—A correspondent writes to us to say that this excellent and delicately flavoured early Apple has much merit as a cooking variety at this time of the year. It preserves its form when cooked, and has a brisk and peculiarly delicate flavour in that state.

The Early Peaches.—We have had the chance to test this season the following, all grown within sixty miles of each other, and without going into details, must say that for earliness we believe them to stand as follows:—1; Downing; 2, Saunders; 3, Alexander; 4, Musser; 5, Amsden; 6, Beatrice; 7, Wilder; 8, Hales' Early. We believe these will ripen in the order named if grown all near each other.—*Gardeners' Monthly.*

Pears in New England.—Mr. Manning says, in his report to the American Pomological Society, that Clapp's Favourite, when picked in season, brings a higher price than the Bartlett (our "William"), and no difficulty is then found on account of its rotting at the core. Its great beauty is a temptation to allow it to hang long on the tree. Beurré d'Anjou continues to increase in popularity. Beurré Clairgeau thrives much better on warm, rich soils, than on those that are strong and moist.

Foster's White Seedling Grape.—This, in my opinion, is the most insipid Grape grown. I have tasted it at several places this season, and in every instance it was quite destitute of what I consider good flavour. In this respect it is much inferior to Buckland Sweetwater or Royal Muscadine. It grows and fruits well as an early variety, but what does that signify if the flavour be deficient?—A. B. Y.

P. Barry Pear.—This, according to Mr. Downing, in the "Supplement" to his book on the "Fruits of America," is a very promising new December Pear, raised by Mr. Fox, San José, California. Mr. Fox has raised several seedling Pears of great merit, at least as grown by him; how they will succeed elsewhere has yet to be tested. The fruit is large, elongated, pyriform, a little obtuse; skin deep yellow, nearly covered with rich golden russet; stalk of medium length and thickness, inclined, set rather obliquely in a medium cavity, sometimes by a lip; calyx small, open: basin small, regular; flesh whitish, fine, juicy, melting, sweet, slightly vinous, and rich.

TREES AND SHRUBS.

THE OAKS OF THE UNITED STATES.

By Dr. GEORGE ENGELMANN.

We have quite a large number of Oaks in the United States, which for more than 100 years have attracted the attention of botanists, and we thought we knew them pretty well, *i.e.*, we thought we could distinguish, limit, and group the species. That may have been so, to a great extent, in the old States; but when the Rocky Mountains and the regions west of them came to be explored, new forms were discovered, and often on single specimens, and not rarely on imperfect ones, species were founded and incompletely described, so that now a straight, clear path through such intricacies is difficult to find. A striking example of the deceptive polymorphism of these Western Oaks is furnished by the common Rocky Mountain Scrub Oak. This interesting species grows on the foot-hills of the eastern slope of the mountains of Colorado, sparingly near Denver, scarcely north of that city, but abundantly southward, about the Pike's Peak region, and thence extends through New Mexico eastward into Texas, and westward through Utah and Arizona into Southern California. The centre of distribution perhaps, at all events the classical locality of this species, are the mountains above Canon City, in Southern Colorado. In the valley and on the mountain slopes about this place the Oak thickets abound, from 6 ft. to 8 ft. high, single trees occasionally 4 in. or 6 in. thick, and rising up to 12 ft. or 15 ft., rarely higher. The leaves are 3 in. to 4 in. long, broadly obovate, deeply lobed, sometimes pinnatifid, underneath stellate-pubescent; the broad lobes obtuse or retuse, often again two or three lobed. They bear middle-sized or small oval Acorns in more or less knobby hemispherical cups. Scattered copses of these broad-leaved Oaks, often of a beautiful brownish-purple in September, accompany us to within a few hundred yards of the top of the canon, but here the character of these shrubs changes: the bushes are lower, the leaves smaller and in outline narrower, the lobes narrower and mostly undivided, but still obtuse. Now we near the precipice itself; from the ragged, dizzy edge we here and there get a glimpse, through the inaccessible gorge, of the young Arkansas, whose clear green waters toss and foam 1200 ft. or 1500 ft. under us, rushing towards the plains. The Oak bushes accompany us even here, but now they are only from 4 ft. to 6 ft. high, with leaves 2 in. long, ovate-lanceolate in outline, no longer lobed, but coarsely dentate, the acute teeth terminating in a sharp point; the Acorns are scarcely different from those noticed before. A few steps more and we have reached the brink of the precipice itself: Oak bushes here too, but only 3 ft. or 4 ft. high, with small (1 in. long), oval, firm, almost cartilaginous, semi-persistent, spiny-toothed leaves, here and there with only very few teeth or quite entire; the Acorns proportionately smaller, of the same short, oval shape, or often elongated from an unusually small, scarcely knobby, and sometimes peduncled cup.

We feel satisfied that we might have abundant material to characterise several distinct species, certainly four or five well-marked forms, and, indeed, they have been considered such. The first is Nuttall's Quercus Gambelii (Q. stellata, var. Utahensis, D. C. Prod.); the second is Q. alba, var. Gunnisoni of Torrey; the third, with acutish lobes or coarse teeth, is Torrey's old Q. undulata of Long's Expedition, the first Oak obtained from these mountains, and described about fifty years ago; the fourth, from the edge of the precipice itself, is what has often been mistaken for Torrey's Q. Emoryi, or what has been named Q. pungens, Liebm., in part; with it occur entire-leaved forms which seem to unite with this as a fifth form the Q. oblongifolia, of the same author, and Q. grisea, Liebm. As a large and broad-leaved south-eastern form somewhat allied to Q. Gambelii I consider Q. Drummondi, Liebm. In herbarium specimens they all appear distinct enough, but, looking around us, the very abundance of material must shake our confidence in our discrimination: within the compass of a few hundred yards we find not only the forms above distinguished, but numbers of others which are neither the one nor the other, but which are intermediate between them and clearly unite them all as forms of one single extremely polymorphous species. If one Oak behaves thus, why not others? Thrown into a sea of doubt, what can guide us to a correct knowledge?

Though Oaks are so common, and such well-studied plants, I venture in the following pages to repeat old observations, in order to combine with them some which I think are new, and which will help to throw a little more light on the subject.

The trunk—its bark as well as its wood—is what we first contemplate, and this at once takes us to one of the principal points I wish to discuss. That the trunk is that of a large, sometimes one of the largest, or of a middle-sized tree, or occasionally that of a shrub, even a very low one, is well known. On the Atlantic slope of the continent most species of Oaks make trees, and only a few are known as shrubs; I can now recall not more than one species, the Live Oak of the south, which occurs in both forms: usually an immense tree, it occasionally bears a rich harvest of fruit as one of the smallest bushes. But it is different on the Pacific slope; there we find many Oaks as trees in the lower countries, and as shrubs, usually with smaller foliage and smaller fruit in the mountains. The lesser number of Oaks seem to occur solely in one or in the other of these forms. Examining the bark we at once become aware of the fact that the popular distinction of White Oaks and Black Oaks is based on correct observation. The paler, ashy-gray bark of the former, and the darker, often nearly black, colour of the latter correspond, as will be shown, with other essential characters, and well mark the two principal groups of our American Oaks. The bark of the White Oaks is inclined to be scaly or flaky, that of the Black Oaks is usually rougher, and deeply cracked and furrowed. The wood of the White Oaks is tougher, heavier, and more compact—the only Oak wood which is fit to be used by the wheelwright or cooper, and is for their purposes unsurpassed. The wood of the Black Oaks is brittle and porous, makes poorer firewood, and made into barrels holds only dry substances. Undoubtedly the microscopical investigation of both classes of Oak wood will scientifically establish and confirm these distinctions. While many other trees, such as Pines, Walnuts, Hickories, Gleditschia, &c., grow rapidly in the first decades of their life, and make narrower and narrower annual rings as they grow older, the Oaks either hold their own, the annual rings being as wide in age as they are in youth, or they grow more rapidly after the first 100 or even 150 years of their existence. The winter buds, especially the terminal ones, show some characteristic differences; they are larger or smaller, acute or obtuse, smoothish, or hairy, or tomentose; Quercus Garryana can be readily distinguished from all the allied Californian Oaks by its large, pointed, tomentose winter buds.

In the leaves, so extremely variable in form, certain types are generally recognized. It is not here the place to expatiate on these well-known topics, but I may be allowed the observation that those Oaks, which in the perfect state have deeply-lobed or pinnatifid leaves, show in young shoots, or on adventitious branchlets, less divided or only dentate, sinuate, or even entire leaves (*e. g.* Q. alba, stellata, falcata, coccinea, palustris, &c.), while, singularly enough, the Oaks, whose leaves in the adult tree are entire or nearly so, often have on the young shoots dentate or lobed leaves. For examples I need only refer to Q. aquatica, Q. Phellos, and Q. virens, and even Q. nigra belongs here. The vernation of the Oak leaves has sometimes been mentioned as conduplicate, meaning that the upper sides of both halves of the nascent leaf are applied together, and this really is the case with most Oaks which I have been able to examine at this early stage. We find it both in White and Black Oaks—almost always, I believe, in those with broad and deeply-lobed leaves; I mention only Q. alba, macrocarpa, and Garryana, Q. coccinea and palustris, and also the forms allied to Q. Prinus, even those with narrower, dentate leaves. In the more deeply-lobed, broad-leaved Black Oaks, the two halves of the leaf are, besides, plicate parallel with the principal nerves. Next to these range the Oaks with the young leaves concave and imbricately covering one another. Such we find in Q. stellata of the first, and Q. nigra of the second group, both with densely tomentose, thick, young leaves. In other Oaks, mostly such as have broader and more or less entire leaves, the young leaves imbricatively cover one another like those last mentioned, but are convex on the upper side, with the edges turned down or back. Such is the case in Q. cinerea,

myrtifolia, agrifolia, aquatica, chrysolepis; and, I believe, also in Q. undulata, and in Q. Wislizeni; I find the same to be the case in the deeply-lobed Q. falcata. The narrow-leaved Oaks of both sections have revolute young leaves, the halves being spirally rolled backwards towards the midrib, so that only the upper side of the leaf is exposed; the point of the young leaf is somewhat spreading so that the branchlet has a squarrose appearance, while in those with imbricative vernation it is compact. I find the revolute leaf in Q. virens, pumila, Phellos, heterophylla, and imbricaria. In Q. Catesbæi I observe an inflexed vernation, the long bristle-pointed lobes of the nascent leaf being curved down over the still younger one. I believe that the characters of vernation will not only help to distinguish allied species or doubtful varieties, but will also assist in unravelling the intricate questions of hybridity. The young leaves of almost every Oak are coated with a dense stellate down, which in some (Q. alba, Q. rubra, &c.), is early deciduous, or it disappears later, or is entirely persistent. Besides these stellate, one-celled hairs, several species, those with a clammy feeling of the young leaf, have another kind of hair, single or a few stellately connected, consisting of several cells, obtuse or clavate, sometimes branched and often coloured, apparently glandular. I notice these articulate hairs, among the White Oaks, in Q. stellata, and less conspicuously in Q. macrocarpa; among the Black Oaks, in Q. nigra, myrtifolia, cinerea, falcata, aquatica, and laurifolia; in Q. chrysolepis the characteristic "golden scales" are no scales, but consist entirely of such articulated yellow hair, and the young Q. Catesbæi has the same rusty coating. The venation and more or less distinct reticulation of the leaves also present characters not to be neglected; by them, *e.g.* two easily confounded Californian Oaks, Q. agrifolia and Q. Wislizeni, can readily be distinguished even in sterile branchlets. The persistence of the leaves is a good character in some species, while in others it is unreliable; Q. pumila and Q. laurifolia on the eastern and Q. agrifolia on the western coast sometimes retain their leaves until the new ones are fully developed, and other specimens, even in the same neighbourhood, lose them before the buds swell; some have deciduous leaves northward and partly persistent ones southward. The broad-leaved forms of Q. undulata are decidedly deciduous, while those with small, coriaceous, spiny-toothed leaves retain them through part of the winter, or, towards their south-western limit, even into summer. Only such Oaks ought be called evergreen which retain the greater part of their old leaves, at least until the new ones are fully grown; the leaves of some Oaks persist even into the third year.

The male flowers are important for the diagnosis of some species, and to some extent even for the grouping of them. I pass by the form and pubescence of the bracts and of the calyx-lobes as well as the pubescence of the anthers (among all our Oaks only observed in Q. stellata and Q. virens); even the sometimes present cusp or point of the anthers seems to be of less value, because variable in some species. Of greater importance is the size and the number of the anthers. The smaller and more numerous (usually from five to eight or even ten, rarely only four) occur in the White Oaks, while in the Black Oaks the anthers are usually larger and fewer, as a rule only four, in some species as many as five or six; only in Q. agrifolia, which also shows other abnormal characters, six to eight stamens are the rule, and sometimes ten are found. The pollen-grains of both groups have a diameter of about 0·03 mm. In numerous flowers of a certain tree of Q. nigra I have seen abortive pistils with prominent filiform styles—singularly enough always two, where we might have expected three. In flowers of Q. agrifolia the connective of the anthers was seen to elongate, the cells to dwindle down and finally to disappear. The female flowers furnish valuable characters to distinguish the principal groups of our Oaks. The pistil consists normally of three carpels and three stigmas; not rarely four occur, and in some Californian species (Q. agrifolia and Wislizeni) I have repeatedly seen as many as five. The stigmas in our species are dilated, retuse, or emarginate; in the White Oak group they are sessile, or rarely (and that sometimes in the same species) borne on short, more or less erect, styles; in the Black Oaks we always find them on longer, patulous, or recurved styles. A group of White Oaks with biennial fructification, peculiar to Southern Europe and Eastern Asia, the best known representatives of which are Q. Cerris, Q. Pseudosuber, and Q. occidentalis, differs from all these by their patulous or recurved styles bearing ligulate, acutish stigmas. As the stigmas are measurably persistent, we often recognise this difference even in the mature fruit.

The fruit exhibits the most important characters in the period of its maturation, first noticed by Michaux, and especially in the position of the abortive ovules, the beautiful discovery of A. De Candolle. But before I speak of these I must allude to the position of the fruit on the branch. It is single, or clustered in the axils of the leaves or their scars, sessile, or more or less peduncled. In the Black Oaks the peduncle is short or missing, but in the White Oaks it is sometimes several inches in length; its presence, however, is of very little specific value, as in many species either sessile or peduncled Acorns are found. In some Oaks this feature is connected with slight differences in the length of the petiole or the shape of the leaf; the distinction between the European Q. Robur and Q. pedunculata is based on such differences, and we have an analogous difference in our Q. alba, where, at least here in the Mississippi Valley, the form with deeply-pinnatifid leaves has usually peduncles as long or little shorter than the Acorn, and the other form with more broadly-lobed leaves has shorter peduncles or sessile fruit, but sometimes we find sessile and peduncled fruit on the same tree. Some White Oaks have always sessile or nearly sessile Acorns, as Q. stellata, while Q. bicolor always bears them on long peduncles. The Acorns mature either in one season or in two, and, generally speaking, we find the annual maturation among the White Oaks, and the biennial maturation in the Black Oaks, but the exceptions to this rule prove that this peculiarity is not necessarily connected with the essential characters of the two groups. We have one western White Oak, Q. chrysolepis, with biennial fruit, and three Black Oaks with annual maturation, Q. pumila of the east, and Q. agrifolia and Q. hypoleuca of the west. The biennial maturation is easily recognized in the Oaks with deciduous leaves; the tree is never without younger or older fruit, or, from May to December, with both; the older Acorns are then seen on the older, leafless part of the branchlet, and the young, incipient ones on the younger, leafy part. In Oaks with persistent leaves some difficulty may arise from the peculiarity that the branchlets which had flowered the previous year, and are now maturing the fruit, often in the second year do not elongate, or make new leaves or new wood—in short, do not perform any function but the maturation of the fruit. In this case the fruit is found near the end of the branchlet, absolutely as if it were an annual fruit; but the appearance of the leaves, as well as of the epidermis of the branch, proves them to be over a year old, and wherever a new shoot of the present year can be discovered, the difference between this and those of the last year easily solves any doubts. In Q. chrysolepis this peculiarity is quite striking; very rarely (at least, in the herbarium specimens examined by me) the fruit-bearing branchlets elongate and again bear flowers, which is the rule in our deciduous biennial Oaks. The cup of the Acorn, an involucral organ, is, in all our species, covered with imbricated scales, appendicular organs which simulate bud-scales, and even occasionally seem to assume a pseudo-phyllotactic arrangement. In the Black Oaks these scales are membranaceous and never thickened at base; in the White Oaks, on the contrary, they sometimes have herbaceous tips, and, at least, the outer and lower ones are always more or less thickened, inflated, or knobby at base; they are very thick, *e.g.* in Q. alba and lobata, and very slightly thickened in Q. stellata and Garryana; in Q. macrocarpa they are herbaceously tipped. The shell of the Nut or Acorn is thinner in the White Oaks and thicker in the Black Oaks; a much more important and striking character is, that in the former its inside is dark, smooth, and even shining, or rarely pubescent, and in the latter densely silky-tomentose, a difference which, I believe, is constant. Only one of the six ovules of the Oak ovary is developed, while the five others persist as small but distinctly recognisable oval, dark-coloured, pendulous bodies, outside of the seed-coat, in the White Oaks at the base of the perfect seed, in the Black Oaks just below its tip. Only in one of our

species, Q. chrysolepis, are they intermediate or lateral, in some Acorns almost basal, and in others scattered over the side from near the base to two-thirds up. De Candolle has observed the same in the Cork Oak of Europe and in some Mexican White Oaks. The Black Oaks, with annual fructification, have these ovules always suspended near the tip of the seed, and are in this respect undistinguishable from the regularly biennial Black Oaks. It is well known that in the south-eastern Live Oak, both Cotyledons are united in one mass—a singular but isolated fact which has no systematic significance.

In the foregoing remarks I have purposely left aside the very peculiar Californian Q. densiflora, which is in every respect different from the other Oaks, and thus far the sole representative of a peculiar group named by De Candolle Androgyne. In many respects it is more a Chestnut than an Oak, for it has, just like the Chestnuts, the same dense-flowered, erect male spikes, ten stamens to each flower, very small anthers on long filiform filaments, with very small pollen-grains (0·017 mm. in diam., not much more than half as large as in other Oaks), and in the female flowers slender, terete, pointed stigmas, grooved above. In place of the spiny involucre of the Chestnut our plant has a spiny cup, and is thus made an Oak and not a Chestnut. The maturation is biennial. The shell of the Nut is thicker and harder than in any other of our Oaks, the inside thickly tomentose, and the abortive ovules are found near the top of the seed. The wood is brittle and worthless. It results from these investigations that our Oaks, leaving again aside the one last mentioned, arrange themselves into two great groups, often alluded to above as the White Oaks and the Black Oaks.

The White Oaks are characterised by paler, often scaly, bark, tougher and denser wood, and sessile or sub-sessile stigmas, and bear the abortive ovules at the base or rarely on the side of the perfect seed. Besides this, the leaves and their lobes or teeth are obtuse, never bristle-pointed, though sometimes spinous-tipped; their stamens are more numerous, the scales of the cup more or less knobby at base, the inner surface of the Nut glabrous or (rarely) pubescent; the fruit generally matures in the first year.

The Black Oaks have dark, furrowed bark, brittle and porous wood, styles long and spreading or recurved, abortive ovules always near the tip of the perfect seed. The leaves and their lobes are bristle-pointed, at least in youth; lobes and teeth acute; teeth sometimes spinous. Their stamens are usually less numerous, the scales of their cup membranaceous, the inner surface of their nut always tomentose; the fruit generally matures in the second year. We may then arrange our Oaks in the following order:—

I.—Lepidobalanus (Endl.)

Male catkin pendent; pollen grains 0.03-0.04 in diameter; male and female flowers separated; stigmas dilated.

A. Leucobalanus.—Abortive ovules inferior and rarely lateral; stamens generally 6-8; stigmas sessile or sub-sessile; the Acorn glabrous, or rarely pubescent.

* Annual.—Acorn glabrous; abortive ovules inferior.

† Deciduous.

Q. lyrata (1), macrocarpa (2), alba, lobata, stellata, Garryana, bicolor, Michauxi (3), Prinus (4), prinoides, Douglasi, undulata (5).

† † Evergreen.

Q. dumosa (6), Emoryi (7), reticulata (8), virens (9).

** Biennial.—Acorn pubescent; abortive ovules inferior or lateral; leaves evergreen.

Q. chrysolepis (10).

B. Melanobalanus.—Abortive ovules superior; stamens generally 4-6; styles elongated and slightly curved; Acorn silky-tomentose.

* Annual.—Leaves persistent or sub-persistent.

Q. agrifolia (11), hypoleuca (12), pumila (13).

** Biennial.

† Deciduous.

Q. palustris, rubra, Sonomensis, coccinea (14), ilicifolia, Georgiana Catesbæi, falcata, nigra, cinerea (15), aquatica, laurifolia (16), heterophylla (17), imbricaria, Phellos.

† † Evergreen.

Q. Wislizeni (18), myrtifolia (19).

Androgyne (A. de C.).

Male catkin erect, bearing female flowers at the base; pollen grains about 0.017 mm. in diameter; stigmas linear.

Q. densiflora.

Notes.

1. Quercus lyrata (Walt.) extends as far north as Taxodium does to the banks of the Lower Ohio in Illinois.

2. Q. macrocarpa (Michx.) is extremely variable in the size of its Acorns, and especially in the depth and margin of its cup, which sometimes covers the Acorn scarcely one-half, usually three-fourths, and occasionally entirely; the margin is profusely or sparsely fringed. Throughout the north-west, north of the Missouri River, a low, scrubby form is found, which might be designated as var. depressa, as it is undoubtedly the obtusiloba (*b*) depressa (Nutt. gen. 2, 215) which has smaller leaves and much smaller Acorns than the species, but is clearly a form of macrocarpa.

3. Q. Michauxi.—This plant is distinguished by having the leaves obtuse, or mostly cordate, at base; thicker, more leathery, and tomentose on the lower side, and the male flowers ten-androus. All the forms of Prinus proper have a very deciduous pubescence on the lower side of the leaf, which is acute or acutish at base. The figure of Michaux, quoted by Nuttall, refers to Q. bicolor, and none of his figures represent our plant. Elliott adopts Nuttall's name, but Chapman, as well as De Candolle, consider it a form of Prinus. Q. Prinus was described by Linnæus with foliis obovatis utrinque acuminatis, which sufficiently well agrees with all the forms of Prinus proper.

4. Q. Prinus (Lin.) would then comprise Michaux's varieties, palustris, monticola, and acuminata.

5. Q. undulata (Torr.) has been treated of in the introduction to this paper; the different forms, there also enumerated are—(*a*) Gambeli (Q. Gambeli, Nutt., and probably Q. Drummondi, Liebm.); (*b*) Gunnisoni (Q. alba, var. Gunnisoni, Torrey); (*c*) Jamesi, Torrey's original plant, figured in Ann Lyc. N.Y. 2, t. 4; the original figure reproduced with slight alterations in Nuttall's N. Am. Sylv. 1, t. 3; (*d*) Wrighti, often confounded with Q. Emoryi, and apparently one of the forms comprised by Liebmann in his Q. pungens. Q. oblongifolia, Torr., and Q. grisea, Liebm., seem to be forms with more or less entire leaves; or the latter may perhaps have to be referred to the Mexican Q. microphylla.

6. Q. dumosa.—A shrub of the southern part of California, often very squarrose, sometimes with slender and erect branches; leaves oval, obtuse, often cordate or obtuse at base, spinous-dentate or sometimes entire, dark green above, hoary tomentose or pubescent below, from ¼ in. to ⅔ in. or sometimes 1 in. long; fruit sessile; cup strongly tuberculate, black, between 2 lines and 6 lines in diameter; Acorn large for the size of the plant, oval, or small and narrow. Nutt., N. Am. Sylv. 1, p. 7; Torrey, Bot. Mex. Bound., p. 207. Q. acutidens, Torr. ib. tab. 51, is a larger form of the same. Q. berberidifolia, Liebm., De Prod. 16, 2, p. 36, seem to belong here either entirely or at least in part.

7. Q. Emoryi.—This pretty Arizonian species was collected by Emory in 1846, and soon afterwards by Wright, and then not again until Dr. Rothrock, a year or two ago, brought back fine specimens from Lieut. Wheeler's Expedition. The leaves are not roundish or oval and pale as in Wrighti, but lanceolate, cordate at base, and dark green; the Acorns in all the specimens seen by me are sessile, the bright brown scales of the cup only slightly thickened at base. Torr. Emory Rep. 1848, p. 151, t. 9, Q. hastata, Liebm. Quite distinct from Q. undulata var. Wrighti, which is often confounded with it; the Acorns of Torrey's figure belong to that form of undulata.

8. Q. reticulata (H. B. K.) has been found in Southern Arizona by Dr. Rothrock in the expedition just metioned.

9. Q. virens (Ait.).—A shrubby form is var. maritima, Chapm., Q. maritima, Willd., from which var. dentata, Chapm., cannot be separated; both have shorter, and often larger Acorns, on shorter peduncles than the species; the former is the larger shrub, rarely as much as 10 ft. high, with usually entire lanceolate leaves; the latter often bears fruit when only 1 ft. to 1½ ft. high; leaves sometimes dentate or sinuate-dentate, 1 in. to 2 in. long; vigorous ground shoots occasionally produce broad oval, entire, or dentate leaves, 3 in. to 4 in. long, and 1½ in. to 2½ in. wide.

10. Q. chrysolepis (Liebm.) has so often been spoken of that little need be added. Its fructification was misunderstood until the abundant material, brought together by Professor W. H. Brewer for the California State Survey, permitted me to clear it up. The size of the plant, of the leaves, and of the fruit, is extremely variable, and even the yellow pubescence, which has given it its name, is neither persistent, nor is it present in all cases. Young, vigorous shoots or young trees have spiny-dentate leaves; older trees, especially on fertile branches, usually entire ones. The Acorns are sometimes very large and the shallow cup extremely thick; this is the form Torrey (Pacif. R.R. Rep. v. 365, tab. 9) has described as Q. crassipocula; Dr. Parry sends from San Bernardino still larger cups, 1½ in. in the outer diameter. Dr. Kellogg's Q. fulvescens in Proc. Calif. Ac. 1, 67 and 71, seems (from specimens

seen in. Hb. Brewer) to refer to the form with middle-sized Acorns, and cups of the ordinary shape, without that unusual thickening; his Q. vacciniifolia, ib. 1, 96 (106 ed. 2), is a small-leaved mountain form. Of this variety specimens are found entirely destitute of the yellow, scurfy pubescence, even in the earliest youth. The anthers of this species, usually ten in number, are always strongly pointed; the broad stigmas are closely sessile. The lateral position of the ovules has been mentioned.

11. Q. agrifolia, Née, the first western Oak that became known (1802), is quoted by the author as inhabiting Nootka Sound and California, perhaps by mistake, as now it does not seem to be known much north of the Bay of San Francisco, and it extends as far south as the southern boundary of the State, but does not ascend the mountains. It is a fine, large, almost evergreen tree, but makes miserable timber and even poor firewood. The old leaves partially fall off in winter, so that the heads begin to look less dense towards spring; in some trees the last leaves have fallen before the young ones are developed, but generally they do not come off entirely before the young verdure covers the branches. Dr. Bolander remarks that occasionally odd-looking trees are observed which in spring retain all their old leaves without bringing forth flowers or young shoots—a state of things which resembles the condition of Q. chrysolepis, above alluded to; that species performs the function of maturing its fruit, though it bears no young leaves, while in this case there would be in spring an almost absolute winter-like stagnation of the vegetation. It has certainly an annual fructification, but is in every respect, except in the number of the large stamens (six to eight, and often more), a regular Black Oak. The Acorn is always long-pointed, whence the name Torrey gave it, Q. oxyadenia (Sitgr. Rep. tab. 17), is not inappropriate.

A southern variety of this species is shrubby, with smaller leaves, occasionally pubescent, and with smaller but very abundant fruit. From the often very similar Q. Wislizeni it can, even without fruit, always be distinguished by the dull, pale upper surface of the leaves, which is usually convex, and by the absence of reticulation on it.

12. Q. hypoleuca I name an Arizona Oak which Torrey, in Mex. Bound. Rep., p. 207, refers to Q. confertifolia, H.B.K., a species with biennial fructification and slightly pubescent leaves. Our plant is characterised, besides its annual Acorns, by lanceolate, thick leaves, with revolute margins, and a white, tomentose lower surface. The five-lobed calyx is scarcely hairy, and bears four stamens; no bracts seen even before the flowers open.

13. Q. pumila (Walt. Fl. Carol., p. 234; Michx. Sylv., tab. 17, where the fruit is erroneously represented as biennial, otherwise the figure is good).—This interesting shrub, though first described nearly a century ago, has only, through the efforts of Dr. J. H. Mellichamp, become properly known in the last few years. Living in the immediate vicinity of its habitat, the Pine barrens of the low country of South Carolina, this acute observer has aided me in the most liberal manner in studying this as well as other difficult Oaks of that region.

Q. pumila is called the Running Oak, because, by the aid of its wide-spreading stolons, it covers large patches, sometimes acres with its thickets. It is often, especially where kept down by the frequent fires, only 1 ft. to. 2 ft. high, and has been seen loaded with flowers when only of 6 in.; in other localities it grows from 8 ft. to 10 ft. high, with stems 1 in. in diameter. The leaves, revolute in vernation, are usually about 2 in. long, lanceolate, entire, and often undulate, only occasionally dentate-lobed but in vigorous shoots, sometimes broad ovate and deeply and acutely lobed; another form has obovate, obtuse leaves. They are slightly pubescent when young, but soon become quite glabrous, persist through the winter and occasionally beyond the flowering period. In the male flowers I find pretty regularly four stamens, and in the female three long, recurved styles. The globose fruit in its shallow cup is nearly sessile in the axils of the same year's leaves. Q. pumila, Walt. Michx. Sylv., Nutt. gen., Elliott Flor.; Q. Phellos var. pumila, Mich. Querc. and Flor.; Q. cinerea var. pumila, Chapm., A. De Cand. Prod.

Var. sericea has similar narrow, or larger, ovate-lanceolate leaves, always silky-white underneath; the larger leaves on fertile branches grow over 4 in. long by 1½ in. in width, and on sterile shoots even larger. Q. sericea, Willd., Pursh.; Q. Phellos var. sericea, Ait. The leaves of the glabrous form resemble those of Phellos, and of the silky variety those of cinerea, and without the fruit they could not well be distinguished from some forms of them.

14. Q. coccinea (Wang.).—I have, with some hesitation, followed De Candolle and Gray in uniting with this species Q. tiactoria, Bart., which has broader, less-lobed, and firmer leaves, and a deep yellow coloured inner bark; but I suspect specific differences may yet be discovered.

15. Q. cinerea (Michx.).—In specimens from South Carolina I find, together with the ordinary stellate pubescence, an abundance of yellow, articulated hair on the young leaves, while in flowering Texan specimens it seems to be entirely wanting.

16. Q. laurifolia (Michx.) appears after all to be distinct from Q. aquatica; whether entire or lobed, the leaves of the latter have a cuneate out-line widest in the upper third or at least above the middle; the calyx-lobes are larger and very conspicuous, and the filaments enclosed and only the anthers exsert. Q. laurifolia has lanceolate, oblong leaves, widest about the middle whether entire or lobed; the calyx-lobes are much smaller; the filaments exsert; this in flowering specimens of both species from Bluffton, the only ones which I could compare. A specimen from the Gulf Coast of Mississippi has oval, entire, coriaceous leaves 4 in. long and 1½ in. wide, while those of my South Carolina plants are narrower, and rather approach to Q. Phellos, but never to Q. aquatica. They usually persist until the budding time, but not beyond it; therefore I would not call them really evergreen.

17. Q. heterophylla (Michx.) must, I believe, like the foregoing, be re-adopted as a distinct species, as it is neither a variety of aquatica or Phellos, nor a hybrid of any of these Oaks. As I have not yet seen flower or fruit, my opinion, which stands alone in opposition to the best recent botanists, must for the present be taken for what it may be worth. I distinguish Michaux's species by its long and distinctly petioled leaves, which in vernation are revolute, and are glabrous from their earliest age. My specimens, natives from New Jersey, cultivated ones from Bartram's and Marshall's gardens, and from the European gardens at Verrière, Herrnhausen, and Prague, the latter fertile, agree in this respect among themselves and with Michaux's figure in his Sylva. In all these specimens the leaves are lanceolate, entire, or sinuate-dentate, 3 in. or mostly 4 in. to 6 in. long, 1 in. to 2 in. wide, on a petiole 3 lines to 9 lines long. In the allied species, Phellos, laurifolia, and aquatica, the petioles are usually inconspicuous, or merely 1 line to 2 lines long; only Q. imbricaria, which is also readily distinguished by its pubescence, has plainly petioled leaves. I suspect that some specimens claimed for Phellos are entire-leaved forms of the species in question. May these suggestions induce the local botanists of the lower Delaware region, the favourite home of this Oak, to work up the species!

18. Q. Wislizeni (A. De C.).—With his usual acumen, A. De Candolle discovered this species in a small, fruiting specimen, brought by Dr. Wislizenus in 1851 from the American Fork of the Sacramento River, but, through a mistake of mine, he located it near Chihuahua. Since then nothing further, I believe, has been published about this remarkable Oak, though an abundance of material and very full notes have been gathered by different collectors, principally by Professor W. H. Brewer and Dr. H. Bolander. This species is found throughout the western parts of California, from Shasta to San Diego, principally in the region of the foot-hills, but does not ascend the higher mountains. In some localities it makes a "magnificent tree," 40 ft. to 60 ft. high, with a trunk occasionally 6 ft. in diameter, but branching 5 ft. or 6 ft. from the ground, as most of the large Californian Oaks of both groups are wont to do. On the coast ranges from Monte Diablo to San Diego it also occurs as a small shrub with small leaves. The bark is pale and smoothish in the younger, very rough and black in the older trees. The firm, leathery leaves persist fourteen or fifteen months on the branches; they vary excessively, often on the same tree, from broad ovate to narrowly lanceolate; cordate, obtuse, or acute at base; the margin entire, or with a few teeth, or sharply or closely dentate; shoots or young trees have usually dentate, old and fertile ones more commonly entire leaves. In the earliest age the leaves are very slightly concave, and in vernation imbricate; they bear on both sides articulated hair, but soon become glabrous; the full-grown leaves are mostly dark green and shining, and delicately reticulate, principally on the upper surface. They are usually 2 in. to 4 in. long and half as wide, or rarely narrower; petioles 5 lines to 9 lines long; in var. fruticosa the leaves are only 1 in. to 1½ in. long, oval, entire, or often very sharply and deeply lobed-dentate; petioles 1 line to 2 lines long. The rachis of the aments is stellate-canescent, or nearly glabrous; calyx-lobes five or six, large and broad, nearly glabrous or ciliate-bearded; anthers three to six, often pointed. Bracts of the sessile (or often peduncled) female flowers large, orbicular, membranaceous; the long, recurved styles not rarely four or five in number. Acorns always elongated, 9 lines to 18 lines long, immersed one-third to two-thirds in the cup, which I find varying from 6 lines to 11 lines in depth, and 5 lines to 6 lines in width; cup scales elongated-acutish, light brown, and nearly glabrous. On one hand this species approaches to Q. agrifolia, and on the other to Q. Sonomensis. Dr. Kellogg, in Proc. Cal. Ac. 2, 36 (De C. Prod. 16, 2, 79), scantily describes an Oak under the name of Q. Morehus, which I have no means of identifying; possibly it may belong here.

19. Q. myrtifolia (Willd.).—Willdenow's description of the foliage, which cannot possibly refer to any other Oak, together with his locality, makes it certain that in Dr. Mellichamp's very complete specimens we have his plant before us, and, thanks to him, I can now re-establish this little known and often doubted species. It grows on the poorest sand ridges near Bluffton, together with Pinus australis, very rare there, but apparently extending along the coast to Florida. It makes an evergreen shrub from 1½ in. to 2 in., usually 4 in. to 5 in., and up to 8 ft. high. Leaves rounded ovate, cordate, obtuse, or sometimes acute at base, obtuse and in youth bristle-pointed at tip, revolute on the margin, thick and leathery, persisting from fifteen to eighteen months; leaves vary sometimes to broadly obovate, or are rarely, in young shoots, sinuate-angled; they are usually 1 in., 1½ in., or even 2 in. long, but in vigorous ground shoots have been found 2½ in. and 3 in. in length by 2 in. in width; the young leaves are densely covered with a rusty, clammy scurf of articulated hair, which after a month or so disappears, leaving a glossy surface; vernation imbricate; youngest leaves flat with recurved margins; aments about 1½ in. long with stellate-canescent rachis, five oval, pubescent, calyx-lobes, and a few (mostly only two or three) small, cuspidate anthers; fruit sessile, or usually short peduncled, single or in twos; cup very shallow, about 6 lines wide, with ovate-triangular, obtuse scales; gland ovate or sub-globose, 5 lines or 6 lines long, covered by the cup for one-third or one-fourth of its length. Q. myrtifolia, Willd., Nuttall, Pursh, Elliott, only the first two of which seem to have seen sterile specimens; Q. Phellos var. arenaria, Chapm.; Q. aquatica var. myrtifolia, A. De C.

Hybrid Oaks.

The question of hybridity in plants is, in every case, difficult to solve where its usual character, the sterility of the hybrid, fails us, and where we have nothing to rely on but the rarity and individuality of a form that seems to stand intermediate between two well-established species which occur in its neighbourhood, and which could be considered its parents. This is just the case in Oaks. All the supposed hybrids are abundantly fertile, and those of their Acorns which have been tested have well germinated; in fact, as far as I know, no difference in fertility or germinating power between them and the acknowledged species has been discovered. The seedlings of such questionable individuals do not seem to revert to a supposed parent, a sport of which they might be claimed to be, but propagate the individual peculiarities of the parent—"come true," as the nurserymen express it. At the same time, it is a remarkable fact that, notwithstanding their fertility, they do not seem to propagate in their native woods; we may properly ascribe this to a lesser degree of vitality in the hybrid progeny, which causes them to be crowded out in the struggle for existence—one of the provisions of Nature to keep the species distinct. White Oaks and Black Oaks are too distinct to hybridise with one another. Thus far no hybrids have been discovered among the former, while among the Black Oaks I find six forms, enumerated below, which I consider as real hybrids; of them only a few, usually only single individuals, have become known, their existence cannot well, without straining facts, be considered due to innate variability in a supposed parent. Four of these hybrids have been found in the Mississippi Valley, and two in South Carolina. When more carefully looked for, undoubtedly more will be discovered. The four western hybrids all claim Q. imbricaria as one of the parents, while the two south-eastern ones seem to point to Q. cinerea; both are species with entire leaves, and the mixture of such with lobe-leaved forms would of course be more readily discovered from the intermediate leaf-form of the illegitimate offspring; but it remains for further close examination to ascertain whether lobe-leaved species do not hybridize among themselves, or entire leaved forms also mix together, producing offspring of less strikingly marked characteristics. That we have to look for one of the parents of all our hybrids to only two species, seems to correspond well with other observations, all pointing to the fact that some species of a genus are more prone to hybridize than others. This is true of Verbenas, hybrids of which abound in this neighbourhood in numerous forms as well as in a great many individuals; of most of them V. stricta appears to be one of the parents, perhaps because one of the most common species, or from some innate quality which makes it mix more readily with others; perhaps from a peculiar structure of the flower which may promote insect agency. Our hybrid Verbenas differ from the hybrid Oaks in bearing scarcely any fertile seeds, while at the same time they are so common that evidently they are readily produced anew.

Our Oak hybrids are the following:—

Probable Parents.	Name under which described.
Q. coccinea, Q. imbricaria	Q. Leana.
Q. rubra, ,,	
Q. palustris, ,,	
Q. nigra, ,,	Q. tridentata.
Q. Catesbæi, Q. cinerea,	Q. sinuata
Q. falcata ,,	

1. Q. imbricario-coccinea was first described and figured by Nuttall about thirty years ago, under the name of Q. Leana, Nutt. Sylv. Contin. 1, tab. 5 bis; De C. l. c. 62. The original type was discovered by T. G. Lea, near Cincinnati, and soon after Dr. S. B. Mead found another tree in Hancock Co., Illinois. My specimen, obtained from the first discoverer, has entire, or sinuate, or dentate, or dentate-lobed leaves, 4 in. to 6 in. long, and half as wide, and even in September slightly pubescent below; lobes acute, and bristle-pointed or quite obtuse; base attenuated into a petiole 5 to 8 in. long; Acorns similar to those of coccinea, cup shallower, with obtuse scales. The leaves in Nuttall's figure have a cordate base. Dr. Mead's tree is similar to Lea's; leaves apparently more commonly entire or undulate-sinuate, 5 in. to 7 in. long and half as wide, obtusish at base, with a petiole 1 in. long; the pubescence has almost disappeared on the lower side of the autumnal leaf; Acorns globose, covered from one-third to one-half by the canescent cup. Mr. E. L. Greene sends another specimen from Macon Co., Ills.; it is rather more glabrous, but otherwise similar, without fruit. The relationship to imbricaria is unquestionable, and it is quite probable that among the lobe-leaved Black Oaks we must look to one of the forms of coccinea as the other parent.

2. Q. imbricario-rubra.—I found this hybrid two years ago in St. Clair Co., Ills., twenty miles from St. Louis, in low, fertile woods where both rubra and imbricaria form the bulk of the forest. Growth of the tree and bark like rubra; leaves ample, from 4 in. to 9 in. long, 2 in. to 6 in. wide, obtuse or cordate, rarely acute, at base, the smaller more commonly oblong and entire, the larger ones oval or obovate, entire or sinuate, or with a few broad and shallow obtuse or triangular bristle-pointed lobes; in June still downy on the lower surface; petioles ½ in. to 1 in. long, pubescent; fruit unknown.

3. Q. palustri-imbricaria was observed by me a few years ago, eight miles west of St. Louis, in a little dell where imbricaria abounds; palustris, coccinea, and nigra, together with some White Oaks, were near by; the tree was only 8 in. in diameter, but in full bearing. It had, unfortunately, to give way to a railroad track, but ripe fruit was obtained, which to Mr. Meehan, of Germantown, has furnished fine young plants completely agreeing in character with the parent. Leaves, as far as I could see, not revolute in vernation, pubescent on both sides, but completely denudated before the end of May. Full-grown leaves, broad-lanceolate, mostly acute at base, entire or more frequently with a few (sometimes more) coarse, triangular-lanceolate, acute, bristle-pointed teeth, glabrous on both sides; about 4 in. long, 1½ in. wide, rarely larger; peduncles from 3 lines to 4 lines long; cup moderately deep, turbinate at base, from 6 lines to 7 lines wide, 3 lines to 4 lines high; ovate-obtuse scales, canescent, with bright brown margins.

4. Q. imbricario-nigra (Q. tridentata, Eng. in Hb.), Q. nigra var. tridentata (De C. l. c. 64).—A single tree, rather small, which was soon afterwards destroyed, was found by me, in the autumn of 1849, on the hills six miles east of St. Louis, in company with both supposed parents and coccinea and rubra, together with some White Oaks. Foliage as well as fruit are of such decided character that the origin of this hybrid can scarcely be doubted; the leaves are rather those of imbricaria, with a touch of the peculiar lobation of nigra, and the fruit is more like that of nigra. Leaves elliptical to obovate, entire, or often coarsely three-dentate at the apex, occasionally with a few teeth on the sides; from 4 in. to 7 in. long, 2 in. to 3 in. wide; base rounded or acutish; upper surface dark, shining green, lower one pale, and in September not quite glabrous; petiole from 4 lines to 10 lines long. Acorns closely sessile; the hemispherical, turbinate, canescent cup about half-enclosing the globose nut.

5. Q. cinereo-Catesbæi; (Q. sinuata, Walt. Car. 235, De C. l. c. 74).—It is quite probable that in the tree observed by Dr. Mellichamp, several years since, near Bluffton, S. C., and not far from Walters' abode, we meet with Walters' obscure and long ignored species. Mr. Ravenel has also observed a similar form in South Carolina, and indicated cinerea as one of the parents. Dr. M.'s tree grows on a sandy ridge with Catesbæi, falcata, and virens; cinerea not far off, but rare; it is 40 ft. high and well grown, has a very dark, deeply cracked bark, which is red inside like Catesbæi. Leaves four, rarely

5 in. to 6 in. long, about half as wide, attenuated at base into a partially margined petiole, 3 lines to 6 lines long; leaf itself oblong to obvate, sometimes almost rhombic; sinuate with shallow obtuse lobes to divaricately dentate-lobed; lobes obtuse, or acute and bristle-pointed dark green and shining on upper surface, paler but glabrous and with some axillary down beneath. In early youth both sides, the lower more than the upper, are covered with the rusty, articulated pubescence of Catesbæi, and are as it seems imbricative in vernation. Male flowers with four large pointed anthers. Acorns sessile; cup hemispherical, turbinate, 8 lines to 10 lines wide, 5 lines or 6 lines high; nut oval, 8 lines to 9 lines high, and 6 lines to 8 lines thick, one-third or one-quarter covered by the cup. One of the parents is doubtless Q. Catesbæi, as the other, Q. cinerea falcata, or perhaps aquatica, presents itself; falcata would produce very different leaves, aquatica grows in a different soil and would not probably mix with the "Barren Oak;" so that cinerea with its entire leaves remains, though rare there, as the most probable other parent.

6. Q. falcato-cineraria is quite a late discovery of the same successful explorer, who found it in the vicinity of the last mentioned hybrid. It still more distinctly shows its parentage. Leaves oblong, usually obtuse or cordate at the base; often entire or with one or a few teeth, or divaricately trilobed, some of them exactly resembling forms of falcata var. triloba; leaves three to five, usually 4 in. long, 1½ in. to 2 in. and the lobed ones over 3 in. wide; petiole 6 lines to 9 lines long. The upper surface of the leaves is not reticulated as in most allied Oaks, but almost entirely smooth, like Q. cinerea; pale green; lower side whitish canescent. Young fruit subsessile; no mature Acorns seen.

Q. coccineo-ilicifolia, Gray, Man. Ed. 5, p. 454, found by Dr. Robbins in Massachusetts, is unknown to me.

Several forms of Oaks have at one time or another been considered as hybrids which most probably are varieties or sports of one or other of the well-established species, or, in one instance, seem to claim the rank of species themselves.

Q. olivæformis (Michx.) is, according to A. Gray, a variety of macrocarpa. After carefully comparing several specimens referred to olivæformis with numerous forms of macrocarpa, I cannot but fully coincide with this view. Mr. E. Hall, of Menard County, Illinois, has found a tree in his neighbourhood which has exactly the leaves of olivæformis, as figured by Michaux, lobed so deeply that the midrib is nearly bare, with an ovate fruit larger than that of Michaux (which was most probably incomplete or abortive), and about half immersed in the deep, not fringed, strongly knobbed cup. This specimen has been claimed as a hybrid of macrocarpa and alba (Amer. Ent. and Bot. 1870, p. 191). Such leaves, however, are not very rare in macrocarpa, and I have repeatedly seen in western forms of macrocarpa exactly the same kind of Acorns, with or without a fringe on the edge of the cup.

Q. runcinata was the name given to a form I found in the richest Mississippi bottom-lands opposite St. Louis, together with Q. rubra, imbricaria, and palustris. From its smaller and narrower, grossly dentate, not lobed leaves, and its smaller fruit, it seemed distinct enough from rubra, and was possibly a hybrid of it and some other small-fruited allied Oak. But the leaves of rubra are so variable in size and outline that most probably De Candolle (l. c. 60) is right in considering it a variety of rubra.

Q. quinqueloba I named a form of nigra, with five-lobed leaves, which I found on the hills of St. Louis; De Candolle (l. c. 64) places it correctly with nigra. It is not even a variety, but rather a juvenile state which had become permanent in that tree; young trees or shoots of nigra have sinuate-dentate or many-lobed leaves, but in fertile ones the leaves are almost always more or less three-lobed or three-dentate. I have since seen a tree which on one fruit-bearing branch had only the leaves of quinqueloba, while all the other branches had the regular cuneate three-dentate nigra leaves.

Q. heterophylla (Michx.) has by some been considered a hybrid of some species with entire narrow leaves and a lobed one; De Candolle takes it for a form of aquatica, and Gray partly for that, partly for a form of Phellos. I have above expressed my opinion that it is a good species, not to be confounded with the lobe-leaved forms of either.

[We reprint the above from the "Proceedings of the Academy of Sciences of St. Louis," with corrections kindly added by the author.]

The Lemon-scented Verbena in Spain.—The Lemon-plant or sweet-scented Verbena is highly regarded as a herb in Spain. The leaves are dried for winter use, and it is regarded as one of the best cordials. It is taken in two ways, either as a decoction cold with sugar, or with a cup of tea. A sprig of Lemon Verbena put into a tea-cup, and the tea poured over it makes, it is said, a good beverage.

MR. GLADSTONE ON VILLAGE FLOWER SHOWS.

On the occasion of the distribution of prizes at the recent annual show of the Hawarden Amateur Horticultural Society, Mr. Gladstone spoke as following respecting village flower shows and gardens for cottagers:—The trouble is that the circle of topics opened up by a flower show is not a very large one, but at the same time it is one of which anybody may be very well contented to treat. There is not a better or a more wholesome and salutary village institution in the whole round that can be named than a flower show. In the first place, it is one of those independent institutions which teaches the people to exert themselves; and you may depend upon it that man is not a passive and mechanical being. You don't train man as a plant; he is a moral agent; and if any good is to be done to him or to any woman or child—and I am delighted to see how many young boys and girls have come forward to obtain honourable marks of recognition on this occasion—if any effectual good is to be done for them, it must be done by teaching and encouraging them and helping them to help themselves. As to the people who pretend to take your own concerns out of your own hands, and to do everything for you—I won't say that they are impostors—I won't even say they are quacks, but I do say they are mistaken people. The only sound, healthy description of countenancing and assisting these institutions is that which teaches independence and self-exertion. There is no better kind of exertion than this; it is good for your health, good for your independence, because though a garden is not a very large thing in the life of a cottager, it is a very considerable element of independence, as well as of comfort, pleasure, and satisfaction, when well managed and of proper size. It makes a sensible addition to his means of living, and, for my own part, I sometimes hope you, many of you, may live to see the day when there will be no such thing in this country as a cottage without a garden. I rejoice to think that gardens are increasing. We have said before, and I may say now on my son's part as well as my own, that it is our desire to see them increase here. It is not always a very easy thing to make new divisions of land, because, unfortunately, when a bit of land is given to one, it very often is taken from another. Land is not a thing that can be manufactured. If we could manufacture it we would make larger gardens, and have gardens for everybody; but as opportunity offers, I am glad to think there is every disposition to make them universal. Your independence, your health, and comfort, will be thus promoted, as well as neighbourly assistance, good fellowship, and pleasant meetings of this kind, where we are all met in good humour. We come to know one another better, and I hope we come not to like one another worse. But let me tell you one word more, something more grave and serious, but I hope not sorrowful. When you cultivate the plant that grows from the ground you cannot help thinking a little who He is that makes that plant to grow. When I say you should help yourselves—and I would encourage every man in every rank of life to rely upon self-help more than on assistance to be got from his neighbours—there is One who helps us all, and without whose help every effort of ours is vain; and there is nothing that should tend more, and nothing that does in the well-constituted mind tend more to make us see the beneficence of our Creator than to observe the beauty as well as the usefulness of those flowers, those plants, and those fruits which He causes the earth to bring forth for our comfort and advantage. I am very confident that these few words I have spoken are true, and I believe they will find an echo in your minds, for I must say that the best test of reception of such sentiments is in the zeal and diligence with which the people of this parish have supported this institution, and have come forward to claim these prizes. It is to my wife, to me, and to all of us a matter of the liveliest, and I may say intense, satisfaction to see how this institution has taken root, and is itself I may say one of the fairest and most flourishing plants of all those that have sprung up out of the ground. I hope that it will continue to flourish; it is still young. Let it grow stronger and stronger every year; let us have more and more of the parishioners of this large and growing parish coming forward and competing for these prizes. No enmity will grow out of it; everybody will rejoice in his neighbour's success almost as much as he would in his own. You will all be better for the zeal and energy with which you give yourselves to these useful and healthy pursuits and the support of this beneficent institution.

Rose Hedges.—We never heard any one remark that they had too many Roses; indeed, in nine gardens out of ten there are no more than are sufficient for room vases and other indoor decorations. Distillation, so largely practised by our great-grandmothers, is now carried on by our Rimmels and Piesse & Lubins, who grow acres of Roses on their flower farms at Nice and Cannes for the purpose The "still-room" to be found in nearly every country mansion is al

that now remains of such practices. If Roses be, however, wanted in profusion, either for cutting, for pot-pourri or for other purposes, plant Rose hedges on the fringes of the lawn or alongside woodland walks and drives; or if Briers already exist, bud them with any of the vigorous, free-blooming varieties that may now be found in cultivation. Bud, in short, all the Briers that exist within half a mile of the house, and then, after a time, there will be Roses enough for everybody. It should never be forgotten that the soil on which Briers will grow, will produce the most lovely Roses, and that wherever there is a fence of Hawthorns, Crabs, or Sloes, there the finest Pears, Apples, and Plums would grow equally well. A hedge of Sweetbriers is a luxury, even in the most princely garden; there is one at Moor Park, and most fragrant it is after every summer shower. Among the Roses best suited for hedges, none are better than Gloire de Dijon, Maréchal Niel, Noisettes, Banksian, Ayrshire, Boursault Amadis (itself one of the best of stocks on which to graft or bud delicate Teas and Noisettes), climbing Devoniensis, Lamarque, and the common Sweetbrier. If variety of colour or fragrance be desired, then interplant with Clematis and golden or scarlet-flowered Honeysuckles and the white Jessamine. A Rose hedge once well planted requires very little attention afterwards; a little shortening back of the too luxuriant shoots, and a mulching of rotten manure and leaves every winter will be sufficient, an outlay which will be amply repaid in the shape of plenty of Roses.—B.

Collecting Alpine Plants.—From a late visit to the Tyrol I brought home amongst a number of other plants some of Pyrola uniflora, which I have planted in pots in a mixture of peat, sand, and loam, and placed them under a glass globe in the shade; this was about four weeks ago, and although they still live and some of them look fairly well, they do not seem to have taken hold of the soil yet, and I am afraid it does not suit them very well, as they make no progress. I know now it would have been better to have planted them in leaf-mould instead of peat, but I dare not disturb them again without some proper advice, as the roots are so small that one is afraid to meddle much with them; perhaps I have shaded them too heavily, so that no sun can get at them at present. Should Soldanellas have the full sun, and how should Pinguicula alpina be placed?—E. H. [With reference to the Pyrola, it is probable that no treatment would have induced the plants to grow well soon, as they were no doubt much weakened by the removal and journey. A half-shady situation is desirable, and sandy peat and leaf-mould mixed; a bell-glass is not needed. Soldanellas will thrive in the sun if right at the root. Pinguicula alpina will also thrive in the full sun in a small artificial bog, or in a moist spot in the rock garden. Much depends on the situation, altitude, air, &c., of the garden, to none of which you allude.—A. S.]

The Neapolitan Violet.—Winter is fast approaching, and the season for growing winter-flowering plants will soon be over. Neapolitan Violets suffer much from drought and red spider, especially during such seasons as the present, and they must, therefore, be well looked after till the end of September, especially as regards watering. If the soil and situation chosen for them be suitable and good, crowns selected and planted out in spring will require very little attention beyond watering and keeping them free from weeds and runners; but if extra fine crowns and flowers be required, they will need greater care. The best plan is to confine the plants in spring to a single crown, selecting such as are strongest and best; prepare a border facing the north with some fresh loam and rotten manure, and plant the crowns out on it 9 in. apart. Wire-worms and slugs are two of the greatest pests which Violets have. Therefore, in using fresh loam it should be well looked over, so as to pick out all the wire-worms; a little soot put in it will tend to keep down slugs. Red spider is also very troublesome to Violets; but a sprinkling twice or thrice a week with water will keep it in check. A mixture of soot and sulphur is also a good remedy for this pest, but it should be syringed off afterwards, well washing the under sides of the leaves. Sometimes this Violet will grow very weakly, and the leaves become yellow as if attacked by red spider. If a plant in this condition be lifted it will be found that the cause of the disaster is in the soil; the roots will be seen to have turned black, and, at the same time, no sign of blight will be found on the plants. Lime-water applied to such plants will often restore them to health. This disease seldom attacks them, except in wet seasons. This season let the runners be all taken off carefully; pick all the yellow or bad under foliage, so as to keep the plants free from slugs; hoe among them once a fortnight, so as to keep the ground fresh, and allow the rain to penetrate to the roots. Water once a week with soot and cow manure-water, in which a few sheep droppings have been steeped. Mix them in a large tub, putting about two quarts to four gallons of water; with this water the plants every other day during hot weather; but if rains come they only require a little manure-water about once a week till the time of transplanting has arrived. If Violets are required to be in flower early in December, they should be lifted and planted in their winter quarters earlier than if they are to flower in spring.—H. G.

Orchids in Flower at Kew.—A plant of Cypripedium Veitchianum is now in bloom here, and its large-spotted flowers are remarkably well coloured. This plant and its ally, C. Dayanum, are so distinct from all the other varieties of C. barbatum, that they should be included in every collection of stove Orchids. Miltonia spectabilis, an easily-grown and very pretty species, is also blooming freely in this establishment, as is also its still more beautiful congener, M. Regnelli, its ivory-white sepals and petals being delicately shaded with peach or faint rose. Several plants of Vanda insignis are likewise in bloom here, as is also the old crimson-flowered Broughtonia sanguinea and the dark blotched, ivory-petalled Dendrobium Bensoniæ. Among terrestrial Orchids now in great beauty, there are two which should be grown in every collection, viz., Disa grandiflora (whose scarlet and yellow flowers, borne on tall stalks, are now happily not uncommon) and the less popular, although hardly less beautiful Eulophia guineensis. The latter bears long spikes of large purple-lipped flowers, the base of the lip itself being prolonged into a curiously-curved spur or nectary.—B.

OBITUARY.

We regret to have to announce the death of Mr. John Royston Pearson, of Chilwell, near Nottingham, an event which took place on the 4th inst. Mr. Pearson has been throughout his too short life (he was only fifty-seven) an enlightened pioneer of progress in all matters relating to gardening. He was one of the first among us to take up the new system of orchard-house culture, as advocated by Mr. Rivers, and in which he was eminently successful, and his well-directed efforts to improve zonal and nosegay Pelargoniums and in raising new Grapes are well known. The best of his seedling Grapes are Ferdinand de Lesseps (1870), Chilwell Alicante (1871), and Dr. Hogg (1872), a cross between the Royal Muscadine and the American Strawberry Grape. Clusters of this variety were shown at a recent meeting of the Royal Horticultural Society, and it is now well known as one of the most delicious of all Grapes in flavour. Golden Queen, also likely to prove one of our best white or amber-tinted Grapes, is a seedling from Alicante, crossed with pollen of Ferdinand de Lesseps. This last new Grape Mr. Pearson reared from the same parents as Golden Queen; like that variety it has a robust constitution, and is altogether an excellent Grape, to which a certificate was awarded in 1874. But Mr. Pearson was not only a worker, he was also a writer; and his contributions to The Garden and other journals were always both original and instructive. In social life he was a genial, warm-hearted man, who has leftbehind him a large circle of friends to regret his loss.

NOTES AND QUESTIONS—VARIOUS.

Gloxinias in Cool Houses.—There is now an extensive collection of these in Messrs. Hooper's gardens at Twickenham, flowering with great vigour in a house without artificial heat, and considerably shaded. Their fresh colour and rich green leaves prove them to thoroughly enjoy the conditions. They were started in gentle heat, and afterwards transferred to their present quarters.—P.

Variegated Plants from Seed.—Will any of your readers kindly give me some information on this subject? I believe that Mesembryanthemum cordifolium variegatum, now so largely used for carpet beds, can be reproduced in that way, as can also Pyrethrum parthenifolium aureum, Cobæa scandens variegata, Amarantus salicifolius and a few others; but I am anxious to obtain the names of other variegated varieties which, to use a common expression, "come true" when propagated by means of their own seeds.—F. W. B.

Extra-early Vermont Potatoes.—We are just now lifting an extraordinary crop of this new American Potato. The hot, dry weather which we have lately experienced suits all the American Potatoes well, but of all coloured kinds this is decidedly the best. When boiled, the skin is a beautiful pink colour; the flesh, which is white, is rather too soft to please some, but the variety is worth growing on account of its productiveness alone. Snowflake is also excellent, and will, I think, supersede Lapstone, which is my standard at present.—R. Gilbert, *Burghley*.

Annual Phloxes at Bangor.—The attraction of one of the hotels here is a lovely garden, in which flowers, trees, and shrubs grow most luxuriantly. One speciality is in great perfection, and that is the annual Phloxes. There are large beds filled with them, the varieties being so numerous that I can scarcely count them; I should think there must be fifty or sixty, or perhaps more. They make the most beautiful showy flower-beds I ever saw.—J. C. S.

Lilium Wallichianum and L. neilgherrense.—In The Garden of last week (see p. 182) it is said that Lilium Wallichianum is now in bloom at Colchester. Is not this L. neilgherrense? L. Wallichianum flowers about October, while L. neilgherrense has been in bloom with me for several weeks past, and will continue in flower many weeks to come. L. neilgherrense is the best of all the Indian Lilies yet introduced, and although I have not planted it out, I have no hesitation in saying that it will prove quite hardy, and be one of the grandest ornaments of the flower garden, as well as one of the choicest of plants for the conservatory. In constitution it appears equal to our commonest Lilies.—P. Barr.

Ulmus Roeselsi.—This is the proper name of the plant referred to last week as Ulmus Roeslii in "Notes of the Week." It is a yellow variegated, or rather yellow suffused Elm of great beauty in Messrs. Lee's fine collection. Cornus mascula elegantissima should have been written C. mas. elegantissima.

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

HOW TO GROW, FORCE, AND SHOW THE HYACINTH.

By F. SANDER, St. Albans.

TIME was, and that not so very long ago, when a Hyacinth was worth as much as a hunter or a shorthorn. Bulbs were then the rage; to pay a hundred or two hundred pounds, and even a thousand pounds for a Tulip, was not unusual. Taste delighted in rare possessions, and speculation ran wild. The bulb mania, like others, was followed by a re-action, and bulb-growing went almost out of fashion; thanks, however, to the revival of spring-gardening, and the attempts now made in all directions to garland the year round with flowers, the culture of bulbs is now established on a wider and firmer basis than hitherto. For one bulb-grower at any previous time in the history of horticulture there are a hundred now-a-days. Hyacinths, above all other bulbs, are grown by everybody every where—they adorn the conservatory of the millionaire, and are found in the rooms and gardens of the poorest amateur. Everybody, in fact, grows them, and all want to get them to the highest point of culture, whether in season in the open air, or out of season under glass. But few are content with merely growing or forcing Hyacinths; most people want to go a step further, and to show them. Many school children now-a-days have their show of bulbs, and no class is so poor but it has its show of window plants, exhibitions of Hyacinths, Tulips, Narcissus, Crocus, or other bulbs. The tendency of late years, however, is to crowd most of our bulbs indoors; there are many who have their Hyacinths annually under glass, in pots or glasses, who never have a brilliant display in the open air. Hyacinths may be looked upon as perfectly hardy, though the flower-stems should receive some slight protection from winter frosts and March winds. The Hyacinth is easily flowered, and those who wish to have a brilliant display every year can hardly do better or more economically in the end than buy a few dozen scores or hundreds of bulbs annually. It has been said that bulbs may be grown in England as well as in Holland, but this is one of those statements which are not supported by experience. The Hyacinth, during its season of growth, requires a deep, rich, moist, and light soil, and a humid atmosphere; the last cannot be guaranteed in our uncongenial British climate in the spring; on the contrary, our English springs are harsh and dry. But, notwithstanding this, our seasons, with merely ordinary care, will bring out all the beauty stored up in imported bulbs of good quality, as finely as the more genial climes of other countries.

There is no better situation for the culture of the Hyacinth in the open air than a sheltered bed or southern border, with a sharp slope to the south; in any position it is important that the surface should be convex, or pitched, so that no stagnant water in the winter can rest on the surface; thus made, the bed will be dry. The soil should be light, rich, and sandy. Though many assert that Hyacinths seldom do so well anywhere as under the influence of sea-spray, our experience proves that they grow as well without it; while it is equally certain that salt is a dangerous fertilizing agent, unless for such decidedly saline plants as Seakale or Asparagus. If the soil be stiff and clayey, have it removed to a depth of 2 ft., and fill up with a mixture of leaf-mould, peat, and well-rotted manure, and if possible silver sand; in any case the soil should be rich and dry when prepared. In the place of horse manure, old cow manure may be used. The best time for planting is from the beginning of October to the latter part of December; if planted too soon the Hyacinth will be too forward before the hardest of the winter is past; if too late, the bulbs will be partially exhausted before they are put into the earth. By planting in succession through these three months, we have Hyacinths also in succession for several months in the spring. As to the manner of planting, perhaps the worst mode is that of dibbling in the bulbs, as the pressure of the dibble is apt to leave the ground hard, whereas the soil at the base of Hyacinths should be rather loose, so that the roots may start and grow away freely. When this precaution is neglected, we often find that the mass of roots lifts the bulb out of the ground. We mention this here, but it should also never be neglected in potting for show or greenhouse work. For planting make a shallow trench with hoe or spade 3 in. deep and of a uniform depth; place the bulbs at the bottom and replace the soil, pressing it firmly at the top. Sometimes 3 in. of soil are taken off the surface of the bed, and the place of the bulbs marked at distances of 6 in., 9 in., or 12 in. apart, 9 in. being a good average; place a small handful of river-sand for each bulb to rest upon, and return the soil. It is a good plan, perhaps, to place stakes to the bulbs before covering them, as if this be not done the bulbs are often staked through when the flower-stems need support; it is also a good practice to cover the beds over with 2 in. or 3 in. of Cocoa-nut fibre refuse, which renders the surface frost-proof. The bulbs need no more attention until the flower-stems are much advanced, unless very severe weather intervenes, when they should have a mat or some oiled calico thrown over them. Waterproof calico is also useful in very wet weather, excess of water, especially when iced by February frosts and March winds, being by no means good for Hyacinths, which will thrive all the better for being sheltered by a waterproof covering. Hyacinths in the open air hardly ever require artificial watering, the natural moisture of the soil and the strength of the manure mixed with it being sufficient to carry them through. Tie up the flower-stems as soon as they rise above the foliage, and have protection at hand, as sleety frosts may destroy the flower-stems during severe weather. After blooming, the bulbs, if expected to flower again, must be left undisturbed until the leaves wither or die of their own accord. The bulbs should then be taken up and dried in a stack for a week or two, and finally placed in the sun for a few hours, and the dry leaves pulled off. Offsets should be removed likewise from the bulbs, and stored in dry sand or earth till planting time comes again. Hyacinths especially deteriorate if left in the soil, and it may be laid down as a maxim that the more liberally the bulbs are treated after flowering, the more useful the bulbs will be for another season. Offsets, if carefully cultivated in a rich piece of light soil for two or three years, will then produce a good many flowering bulbs, but, as a rule, imported bulbs are best; however carefully they may be cultivated in England, they seldom or never flower again so well as the first season, and so generally is this admitted that many throw the old bulbs away annually and procure new supplies. A good plan is to plant in the mixed border, when they often make a good show amongst herbaceous plants, or skirting the fronts of shrubberies. Selections for bedding in distinct colours of red, yellow, blue, white, or mixed, are to be bought at a cheap rate from any respectable seedsman or nurseryman, and a comparatively grand display may be made on a large scale with little outlay. Amongst those best adapted for bedding may be mentioned among whites—Alba superbissima, Crown Princess of the Netherlands, La Pucelle d'Orleans, Hannah More, Victoria Regina; among blues—Argus, Bleu Mourant, Emicus, Emilius, Kaiser, Ferdinand, L'Ami du Cœur, Prince Albert, Charles Dickens, William I.; among the red varieties—Duchess of Richmond, Emmeline, Herstelde Vrede, L'Ami du Cœur, Norma, Tempel van Apollo; and of yellows—Alida Jacoba, Catherina, Herrive, La Pluie d'Or, Overwinnaar. These are all single, and well selected cheap varieties, but the best mode of purchasing is to ask for distinct colours, such as dark blue, light blue, white, dark red, light red, and yellow, leaving to the seedsman the selection; this done he is better able, assisted as he is by his knowledge, to serve his customers well. All this applies to border Hyacinths.

Forcing the Hyacinth.

As with all other plants for forcing, so with Hyacinths. The great thing is to have fine, large, heavy bulbs to start with, although there are exceptions to this rule. Many varieties never make large roots, but form, notwithstanding, magnificent spikes. Do not, therefore, be disappointed if you buy a few

small bulbs; but the great average should consist of large roots, which should, as said before, be weighty and plump, not light and loose or advanced in growth. The better the bulbs, the better the flowers assuredly are. Much also depends on securing the bulbs early. It has been said that the desire for early bulbs has led to a deterioration of quality; but that the dates for lifting, housing, cleaning, and selling the Hyacinth have been fixed 100 years ago, and to make a Dutch bulb-grower alter these dates would be as impossible as to move the pyramids of Egypt. Orders, should, however, be given early, for the first-comer is the first served, and carries off the cream of the bulbs. Again early potting secures early rooting, and early rooting strength and health. No Hyacinth will force satisfactorily, unless it is made first to root well; and without this is attended to, the finest bulb will do badly, and only prove a mortification to the grower and be an utter failure. There are several steps in the culture of the Hyacinth which lead to perfect leaves and flower-heads. The importance of starting with the best material at the most suitable time has been already adverted to. The bulbs must also be potted in the best way, placed under the most favourable circumstances, and started skilfully. The soil for the Hyacinth should be rich, light, and porous, and rather loose. It is one of those bulbs that does not like firm potting, and cannot endure cramming in; but let us here call attention to what we said at the beginning—that above and around the bulb the soil should be but slightly pressed; the latter should be a sandy loam but mixed with old decayed cow-manure; drain liberally, and fill a 6-in. pot up to rather above one-half, put a thin layer of clean, sharp, silver sand at the base of the bulb, place the bulb upon it, cover the crown, but do not bury it: let the soil be in a fair state as to moisture, for the bulbs will not receive water for some time. The next step is to choose the right place and treatment for the development of the roots; it is obvious that if the pots were placed in full light that the tops would come forth in advance of the roots. This is the one thing to be guarded against at this stage; we must first have roots in strength and number: place the pots in a cool, well-drained, dry situation in the garden—best in an old frame with the lights off—and place a 3-in. pot over each bulb; this will keep it clean and from rotting; cover the drain-hole of the pot with a small stone or potsherd, and place about 6 in. to 9 in. or 1 ft. thick of clean ashes over them, taking care that the sides of the frame are also well covered with this material. The darkness and seclusion encourage root growth, and in about six weeks the pots will be quite full of roots, and the tops will start with strength and vigour. Practically after four weeks the ashes should be removed, and a more moist substitute, such as Cocoa-nut fibre refuse, or spent tan, should replace them. Now the pots should be moved into a low, well-lighted house, and be placed close under and near the glass—not on a shelf, however—this does not suit them, but on a moist substance or ashes; the small pots should be left over the bulbs for a while, so that the young growth may get steadily used to the light; many growers leave a 4-in. pot over the bulbs for some time. The flower will grow towards the light, that is, towards the opening in the top of the pot, and the leaves will keep down. This is a very essential point, and one to which much attention should be given. The leaves should stand well under, never above, and never covering the spike; and keeping the pot over the bulb will be the first step towards obtaining fine dwarf leaves. If quick forcing be wanted, the pots should be placed on a bottom-heat of 60° or 65°; the flower will start with extraordinary rapidity, but greater strength will be obtained in a temperature 5° lower. In adopting this mode of forcing great care must be taken in applying an excess of heat; the roots must also be thoroughly watered once or twice a day; do not let the material on which the pots stand get dry, but keep it very moist. A Hyacinth once dry enough to flag is half killed. With pots well drained it is next to impossible to over-water. Doubtless Hyacinths flower best forced slowly into blossom; and we should advise a top temperature of 55°. Strongly grown and richly nourished with manure-water, they will need the support of wires or sticks; the succulency of their stems and the strength of their flowers prevent them from standing alone with safety. Almost all nurserymen sell wire supports of the most improved forms at a very low rate. As to the best varieties they are almost infinite, and every year adds to their number. We give the names of a few of the best.

Single Kinds.

White.
Alba maxima
" superbissima
La Vestale
Grand Vainqueur
Baron Von Tuyll
Queen of the Netherlands
Madame Van der Hoop
L'Innocence
La Franchise
Grand Vedette
Miss Nightingale
Mont Blanc

White and Rose.
Seraphine
Anna Paulowna
Cleopatra
Lord Granville
Tubiflora
Mammoth
Voltaire

Red, Rose, and Blush.
Madame Goldschmidt
Alexander
Lord Wellington
Madame Ristori
Gigantea
Norma
Cavaignac
L'Ornement de la Nature

Dark Red, Scarlet, &c.
Beauty of Waltham
Garibaldi
Queen Victoria
Mehemet Ali
Prince Albert Victor
Howard
Macaulay
Robert Steiger
Victor Emanuel

Lilac and Mauve.
Haydn
L'Honneur d'Overveen
Adelina Patti
La Candolle
Sir E. Landseer

Light Blue.
Orondates
Grand Vedett
Aimable Bleu
Celestina
Leonidas
Canning
Grand Lilas
Charles Dickens
Blondin

Dark Blue, Black, and Purple.
Uncle Tom
Argus
Shakespeare
King of Siam
Lord Palmerston
General Lauriston
Bleu Mourant
Feruck Khan
General Havelock
King of the Blues

Double Kinds.

Pure White.
Bouquet Royal
Prince of Waterloo
Grootvorsten
La Tour d'Auvergne
Triomphe Blondina
Lord Castlereagh
Sceptre d'Or
Imperatrice Romaine
A la Mode
Virginie

Light Blue.
Mignon de Dryfhout
Comte de St. Priest
Envoyé
Murillo
Sir John Franklin
Blocksberg
Rembrandt
King of the Netherlands

Dark Blue, Purple, &c.
Prince de Saxe Weimar
Konig von Wurtemberg
Bride of Lammermoor
Louis Philippe
La Charmante
Albion
Garrick
Laurens Koster
Lord Wellington
Prince Albert

Light Red, Blush, &c.
Alida
Catherine
Josephine
Dan O'Connell
Peruque Royale
Bouquet Royal
Czar Nicholas
Frederick the Great
Susanna Maria
Noble par Mérite
Milton
L'Espérance
Panorama
Shakespeare
Grand Monarque de France

Dark Red, Scarlet, &c.
Sir Joseph Paxton
Eclipse
Sans Souci
La Belle Alliance
Bouquet Tendre
Maria Louisa

Early white Roman Hyacinths should be potted in August or September. Planted in a pot and forced, they flower quickly, and are very handy for cutting before Christmas. They are useful for bouquets and decorating purposes.

Hyacinths for Glasses, Vases, Baskets, &c.

Nearly all the above varieties of single Hyacinths will grow in glasses; double Hyacinths are not so well adapted for this mode of growth, are not so effective, and do not make such a fine show as single sorts. November is a good month to begin the culture of Hyacinths in water; nothing is simpler than the mode of procedure. Choose good bulbs, fill the glasses with soft pure rain-water, place the base of the bulb near to, but not so as to touch the water, set the glass in a dark, cool place for six weeks, until, in fact, the glasses are crowded with roots. During that period fill up the glasses with rain-water as wanted, but at no time fill the glasses so full as to touch the bulb; neither is it necessary to change the water, the process being apt to confuse and disarrange the roots. Throw into the water a pinch of charcoal, which has such powerful antiseptic properties that it will keep the water from decomposition throughout the entire season. Gradually bring the plants to the light, and from this time they can endure full sunshine; the more light they enjoy, the stronger and larger will be the spike, and the brighter the colour of the flowers. If the bulb be good to start with, and the roots thoroughly established, the stem will be bold and strong. Hyacinths in glasses need no guano-water or other stimulants: some, however, believe in feeding them with a little salt and a dose of guano or sewage-water; the flowers will withstand it, but are more enjoyable without it. When in full growth the glasses may be replenished with water daily of the temperature of that of the room. There is this advantage in only giving clear

water, the whole of the root ramification adds a new and special charm to the growth of Hyacinths in glasses; the whole plant is visible, and when to a glassful of crystal-like roots are added the bold, dark green leaves, noble stem, and exquisitely coloured and sweetly-fragrant flowers, the pleasure to the cultivator is enhanced. Care, however, must be taken to guard from accident Hyacinths in glasses, and they should be carefully protected with a proper hold-fast attached to or purchased with the glass; the flower-stem is all through in danger of tipping over and breaking both plant and flower. The position of Hyacinth glasses is one of those vexed questions that is mostly left in an unsettled state, and is consequently in most cases finally determined by accident, and as soon as the plant is taken out of its dark, cool abode, the broad piece between two sashes is mostly chosen for it; the roots are exposed to the full glare of the sun, and the plant is subjected to the greatest possible extreme of light and temperature, and the risk of breakage is extreme. A shelf or basket is preferable, or a small movable table is better still; a plant-stand, the bottom of which is furnished with Moss or Lycopodium, is still more artistic; a glass case may also be used, fringed round with Forget-me-nots. If one wishes to transfer plants from pots into water, empty the whole of the soil by turning the pot completely over, and carefully wash the roots clean from every particle of soil, after which they may be placed in a glass filled with clear water. The culture of Hyacinths for showing in water does not greatly vary from those grown in pots, only it is of the greatest moment that the finest bulbs and the choicest varieties be chosen, and that the culture should be the highest and the best. Early potting is also of great importance, but the chief art of cultivating Hyacinths for show consists in timing them to flower at the right season. The shows may take place at any time from January to April. Of course the later they are shown the finer their flowers are expected to be; and this is by no means always the case, the finest Hyacinths generally flowering about February, or some four or five months from the period of potting; this allows ample time for the roots to be fully developed, and the tops to be formed and to unfold their beauty at a slow and sure rate; the bulbs are sometimes stored in a cool place with care by some exhibitors, and not potted till the beginning of December; the best way, however, is to carefully pot and root the bulbs, and to finish them in about three to four months from the time of potting. Abundance of light and air are essential for exhibition Hyacinths to the full bringing out of flower and colour, and also for developing healthy growth in the leaves. The flower-stems must be kept perfectly straight, and turning the pot sometimes is needed; every means should be adopted to stimulate the growth at the end of that period, and to bring out a long spike and well-formed large individual blossoms. Each of these should stand separately, though close enough to its neighbour to make an unbroken whole. The most attractive flowers and decisive colours are the best for showing, and artistic arrangement is needed also. The flowers on the spike should be carefully placed and so arranged that they keep their neighbours up. Each flower should be a thing of beauty in itself, and add to the charm of others n ear it. Every true cultivator will attend to the growth of the leaves—also a great object. The foliage should be dark green and low, not long, straggling, and standing half up, or perhaps above the flower; this must be attained by keeping the plants close to the glass on the cool bottom of the stage. Watering with manure is also needed—should not be overdone, and not omitted; it is a grand plan to keep the flowers well back, and two days before the show to place them into a stronger heat. It is astonishing how fine and long the flower-spike will come, but be careful in doing this; have the leaves well finished beforehand, and be sure to watch the colour of the flower; keep it well to the light. In arranging the flowers on the spike begin at the top, and keep each flower well up; use green painted wire sticks to support your spike, and plunge the 6-in. into 9-in. or 10-in. pots, and let them stand very high up, filling in the opening between the rims at the side and top with carefully selected dark green carpet Moss.

Autumn-sown Annuals.—At p. 181, "W. T." gives a list of plants which, for flowering in spring, require to be sown now. The information was doubtless sufficient for those well acquainted with gardening, but to such as myself a little advice as to which of the plants in the list require to be sown in patches and there remain for flowering, as Virginia Stock; or which, after springing up, require to be transplanted, as Wallflowers, Stocks, &c., would be welcome. They will all do, I suppose, to be sown out-of-doors now, and there to remain.—W. S. [In replying to your correspondent's previous note I had in view chiefly the question of what were the most suitable annuals for furnishing cut flowers in spring. All the plants named may be sown now and where they are to remain, as few of them transplant well owing to their tap] roots. The Collinsias, Coreopsis, and Myosotis are those best suited for removal if required. In any case the seeds should be sown thinly; the soil must not be rich or retentive, or the seedlings may become too gross in habit and suffer more from severe weather than if of more restricted growth.—W. T.]

CELOSIAS FOR WINTER BLOOMING.

Few plants are more striking in the dull days of autumn and the yet more sombre season of winter than these lively-looking, graceful plants. Sow for a last batch in August. Any light soil will do, covering but slightly, as the seeds are small. Place the seeds in pots or pans in heat, and as soon as the plants are up, raise them near to the glass, as future success largely depends on a sturdy habit through the first stage of growth. Pot off as soon as the plants are large enough to handle, and plunge the pots in a bottom-heat of 60° or so, still keeping the plants near to the glass. Under such treatment the plants grow fast, and the pots will soon be full of roots. Shift into larger ones directly, until a 6-in. or 8-in. pot is reached. These sizes, unless immense plants 6 ft. high be required for lofty conservatories, will be sufficient. Properly managed and well fed with manure, a 6-in. pot will grow a Celosia a yard high and almost as much through. Large plants, however, are not by any means the best or most useful for winter decoration. Good, shapely pyramids, about 2 ft. high, in 6-in. pots, are much more useful, as they will stand on a shelf in any out-of-the way part of the stove, and yield quantities of blossom for cutting, and also lighten up, by their many spikes of beauty, foliage or other plants. After their final shift the Celosias should gradually be removed from a tropical to a more temperate climate; a warm, light greenhouse or conservatory is about the best situation for them. This final shift should be into rich soil, composed of turfy loam and leaf-mould, with a free admixture of sand. For summer work the Celosia may have a much richer soil—half of loam and half of rich manure. But less forcing food is better and safer for those that have to pass through the winter. The chief enemies of the Celosias are thrips and red spider; both dislike a moist regimen, and the Celosias delight in frequent syringings overhead. Hence, if the plants be shaded, the pests do not get much hold. Should they, however, do so, smoke twice at least in succession with Tobacco paper, and, in fact, continue smoking until the pests are dead. Nothing is more fatal to the health and beauty of Celosias than red spider or thrips; these mar the beauty of both leaves and flowers, and arrest growth. The spider especially delights in these plants; and this is one reason why all their early growth should be made in bottom-heat, that from fermenting manure being by far the best.

The pyramidal flower-spiked Celosias have almost driven the old crested sorts out of cultivation, and deservedly so. The old Cockscombs were grand things in their way, but required a good deal of skill and care to grow them well, and they refused to group effectively with any other plants. There is a large crimson comb, beautiful enough in its way, but it was not, and never could be made anything more than a comb. Now these new Celosias or Cockscombs group well with all kinds of plants, and are among the most useful of any for cutting for vases or bouquets. Groups of Celosias are very showy by themselves, and have a still richer effect mixed with such strikingly beautiful foliage plants as Amarantus Henderi, A. salicifolius, and A. tricolor.

There are a great many varieties of these feathered Celosias, ranging through the different shades of colours from lilac to crimson, and yellow to orange. Almost each grower has his own specially good strain, distinguished either by its superiority of vivid colouring, size, or profusion of bloom. Among the finer named sorts are the following:—C. pyramidalis aurea, fine golden; C. p. ignea, rich crimson; C. p. aurantiaca, fine orange; C. p. plumosa aurantiaca, in different varieties of colour, such as C. splendida and C. versicolor violacea, is a very fine strain, producing feathery-looking flowers of great richness and beauty. Few plants are more striking or more useful in the stove in winter, or more highly ornamental as pot plants in the conservatory throughout the autumnal months.—D. T. Fish.

NOTES OF THE WEEK.

Tropical Plants in London Flower Gardens. — Tropical Arums and other tender fine-leaved plants used in the flower gardens of the London Parks are already being housed, so that their season at best is a very short one. It is clear that all real improvement in this direction must be with hardy subjects, which happily are very numerous, and of as high an order of beauty as plants requiring the highest temperature.

Heckfield Gardens.—By permission of Lord Eversley, the gardens at Heckfield Place, Winchfield, may be inspected by the public on the 4th, 11th, and 18th of September. Applications for tickets of admission should be made to Mr. Wildsmith. The gardens are very well managed and well worth a visit.

The Winter Cherry.—In Battersea Park may now be seen a portion of shrubbery fringed with this plant, and full of fruit. The margins of shrubberies, etc., form some of the best places for growing plants of this character, and it would be well if, instead of the mean (and meaningless) line of "scarlets," we were to meet old friends here and there in such positions.

Althæa frutex well grown.—This fine autumn-blooming shrub would well repay for good culture; we mean by that, selection of a sunny, warm position, good and well-drained soil, and plenty of room, so as to secure shapely and furnished bushes. We notice many specimens about London deprived of air by being crowded in among other shrubs, and robbed at the roots by the same ill-fed and ill-cared-for crowding.

A Fine-foliaged Tree.—Many of our trees have looked rusty of late, but there is at least one striking exception, and that is, that fine hardy tree Pterocarya caucasica, which has very handsome, rich green, pinnate leaves. A good young specimen may be seen on the lawn near the dell at the end of the Serpentine in Hyde Park. Some young trees of common sorts are near it, and will require removal in due time to prevent injury to the rarer species.

Pot Vines in Covent Garden.—London fruit growers are apparently not contented with their produce being brought to market in a cut state, for we notice in Covent Garden this week well-grown Vines in pots, each carrying from six to eight bunches of fruit of fair average quality; the rods are led round stout stakes, which are placed at equal distances apart in the pot, and the bunches are secured from injury by means of wadding.

Dwarf Bedding Dahlias.—These, now at their best in the Wellington Road Nurseries, are very attractive and valuable at this season of the year, when other bedding plants are past their best. They do not grow more than 1 ft. or 15 in. high, are of a strong branching habit, and are profusely laden with well-formed flowers of various shades of colour. They are well adapted for beds or narrow borders, and if planted in a deep, moist soil, will continue in bloom until frost sets in.

Second Flowering and Leafing of Trees.—Some of the Chestnuts on the Paris Boulevards are putting forth a second crop of leaves and blossoms. This not unfrequently happens towards the end of September or in October, but the excessive heat of the first half of August has accelerated the shedding of the spring foliage and starting of the new buds. The same thing is occurring in the London Parks, mostly with the Lime. Nothing of the kind seems to happen in the case of American trees.

The Cardinal Flower (the Scarlet Lobelia) is just now making the swamps, ditches, and low grounds throughout the Northern States of America, we learn from "Moore's Rural," brilliant with its showy plumes. It has few rivals in colour. We regret to observe that this fine plant, of which many fine forms have been raised in this country, is now seldom seen in London gardens. It frequently perishes in winter, which may explain the fact, while it is perennial on some soils.

Bocconia cordata.—Mr. Wildsmith, writing from Heckfield, says: —Allow me to supplement the note on "Funkias for the Wild Garden," by naming another kind of plant equally well suited for the same purpose, viz., Bocconia cordata; just now this is in fine bloom, and not having been disturbed for over four years, the panicles of flowers which it is bearing are magnificent. Depth of soil is of greater importance than richness, and it is very impatient of removal, hence its suitability for the wild garden.

Double Zinnias.—These are flowering unusually well this year, the bright warm weather which we have had having been highly favourable for their growth. Both at Blenheim and at Woolverstone Park, they may now be seen in great perfection, their flowers being as large and double as those of some Dahlias, and infinitely more varied in colour. The bed in which they are growing at Woolverstone is 30 ft. in length and 10 ft. in width, and literally a mass of floral beauty.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Spring-sown hardy annuals of various kinds are now so very ornamental on rich soils that it is surprising they do not receive more attention, for if sown in succession they keep up a continuous supply of flowers of the most showy kind from spring until late in the autumn. There is no comparison between annuals sown on dry, hot soils, and those planted on deep, well-enriched ground, and the latter should always be chosen for them when possible. Clarkias are now especially showy, as are also Godetia Whitneyi and the taller-growing G. Lindleyana. Dwarf crimson, yellow, orange, and rosy Nasturtiums are also in perfection, together with Phlox Drummondi of various colours; Convolvulus minor, Zinnias, scarlet and blue Pimpernels (Anagallis), rosy Rhodanthe, and yellow, crimson, purple, and white Helichrysums, all of which are at present very attractive in Mr. Barr's trial grounds at Tooting. A bed of double and single-flowered varieties of Dianthus laciniatus Heddewigi is now in perfection, some of the double crimson, white, and lilac forms rivalling Carnations in form and colour, while their odour is as delicate as that of the Sweet William (Dianthus barbatus). For several years past a choice strain of these Chinese Pinks has been grown in the Rose beds at the Crystal Palace, and nothing can well be prettier than they are, either for cut flowers or for outdoor decoration. The common Cockscomb, and its allies the perennial Celosias, are rarely grown as hardy annuals, but in Mr. Barr's grounds they have done well treated in this manner, while some late-sown Ten-week Stocks are just now in perfection. Late propagated Pansies, and blue and yellow seedling Violas of the V. cornuta and V. grandiflora or V. lutea sections, are likewise very pretty in cool, shady beds. Seedling Antirrhinums are flowering well, and few biennials are better adapted for the ornamentation of dry banks combined with Mignonette and Wallflowers. Tobacco of various kinds, especially the green-flowered Nicotiana rustica, and the pink-blossomed N. virginica, are now among the most stately of all half-hardy annuals, and we saw the other day a very effective bed of these plants edged with the crimson Amarantus caudatus or Love-lies-Bleeding. Among hardy perennials golden and purple-flowered Rudbeckias are now in perfection. Tritoma Uvaria and its varieties are also aglow with flame-coloured flowers. The rich orange-flowered Tritonia aurea is likewise flowering freely, as are also the blue-flowered African Lily (Agapanthus) and Hyacinthus candicans, the latter bearing drooping white flowers on scapes 5 ft. or 6 ft. in height. Many varieties of the common Marvel of Peru (Mirabilis Jalapa) are also now in bloom, and are especially pretty in the evening when the flowers expand more freely than during the daytime. Polygonum orientale, the Oriental or common Persicaria, is now flowering freely, and although of rather straggling habit, its long panicles of bright carmine flowers are found to be useful when cut for the ornamentation of large vases. Japanese Lilies of the L. speciosum and L. auratum types are still very handsome in cool, shady positions, as are also the double and single Tiger Lilies, while scarlet, white, purple, rose, and other tinted Gladioli are very ornamental in herbaceous borders or in Rhododendron beds, where their tall spikes of bright flowers are seen to advantage, contrasted with dark green foliage. The large purple-flowered Senecio pulcher is flowering well in Mr. Parker's nursery at Tooting, and among aquatics may be mentioned the golden-flowered Villarsia nymphæoides, while the chaste Hawthorn-scented Aponogeton distachyon can be seen as floriferous as ever. Mr. Parker has also a distinct dwarf form of the common white Water Lily now in flower, with leaves and flowers scarcely half the size of those of the type. For tanks or pools of limited dimensions this kind will prove especially useful. Œnotheras are now more than usually showy, Œ. grandiflora, Œ. missouriensis, Œ. taraxacifolia being the best among the dwarf section, and Œ. Lamarckiana among tall kinds. One of the best of all perennial Composites now in bloom is Helianthus multiflorus fl.-pl., a Sunflower which grows from 4 ft. to 5 ft. in height, each growth being terminated by bright yellow flowers 3 in. in diameter. This is especially useful for massing in large beds or borders along with Hollyhocks, Dahlias, Tritomas, Gladioli,

Compass Plant (Silphium laciniatum).

Common Villarsia (V. nymphæoides).

Lindley's Godetia (G. Lindleyana).

Flame-flower (Tritoma Uvaria).

Perennial Sunflower (Helianthus multiflorus).

Spiked Button Snakeroot (Liatris spicata).

Great-flowered Hypericum (H. calycinum).

The long-flowered Mirabilis (M. longiflora).

Love-lies-Bleeding (Amarantus caudatus).

Autumn Windflower (Anemone japonica alba).

Cardinal Flower (Mimulus cardinalis).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Rudbeckias, Lilies, Fuchsias, Erythrinas, Pampas Grass, and other strong-growing perennials, such as Elymus arenarius and Cannas. In addition to the above the following are also in bloom, viz.:—Cedronella cana, Tagetes lucida, the yellow-flowered Silphium laciniatum, Tradescantia virginica, Nigella hispanica, Salvia Horminum, different kinds of Brachycome, and Candytufts; the pretty, trailing, Verbena-like Abronia umbellata, double-flowered Lychnis, still one of the most effective flowers of the season; Rock Roses and Erodiums of different kinds, Parnassia palustris, St. John's Worts, Zephyranthes, Gentiana Andrewsi, Erythræa Muehlenbergi, Commelina cœlestis, Centaurea babylonica, Anchusa capensis, the blue Sea Holly (Eryngium cœrulescens), Michaelmas Daisies, Epilobium sericeum, Liatris corymbosa, Monkshoods, Tropæolum speciosum, Lithospermum prostratum, the White Japanese Windflower (Anemone japonica alba), and Echinops ruthenicus.

FORMAL LEAF GARDENING.

Two styles of ornamental leaf gardening are now fashionable—one, under the name of "carpet bedding," being used to obtain purely formal colour arrangements; the other, popularly known as sub-tropical gardening, giving us something of the freedom, grace, and unrestrained aspects of plant form. The best carpet bedding we have seen this year is that in Mr. S. Ralli's garden at Cleveland House, Balham. The materials used in the planting of this now popular display (Mr. Ralli's garden having been thrown open to the public on Tuesdays and Fridays during September and October) are very tastefully disposed, perhaps the most artistic combination being the little clumps of scarlet-berried Duckweed (Netera depressa) which nestle on a soft carpet of Sedum glaucum fringed with the bright green Sedum lydium. A circular basin-shaped bed is very tastefully planted with Nertera and glaucous Sedum around a fresh fountain-like specimen of Dracæna australis, which occupies the centre, the margin of the basin being fringed with a fretwork-like border of glaucous succulents, crimson Alternanthera, golden Mesembryanthemums, with single specimens of the silvery-spined Chamæpeuce diacantha at intervals, the effect of the last-named being to give a very light and attractive appearance to the whole arrangement. A very good effect is obtained in a pair of oblong beds by contrasting the bright carmine-tinted Alternanthera amœna with a dwarf, dense-habited, green-leaved Mint (Mentha Pulegium gibraltarica), which Mr. Legg, the gardener, has used this season for the first time. Most visitors are struck by the wonderful evenness and exactness with which the parti-coloured patterns are here worked out. This result is obtained by varying the style of planting; for example, the dwarf-growing plants used are planted on raised, flat-topped mounds, while the taller-growing varieties are planted in sunk panels, and when the average height of growth of each plant is once attained, this plan enables exact evenness of surface to be secured without much after labour in the way of clipping and pinching. The identical patterns of these beds are of far less moment than the materials of which they consist, as any one can readily vary the pattern or shape of their beds according to taste—a round bed or design being suitable in one case, while an oblong or triangular one might be best adapted for another. The best results are obtained where sub-tropical plants of stately habit are used in the centres of carpet beds—when the bright green foliage and graceful habits of Dracænas, Wigandias, and other large-leaved plants are set off to the best advantage by a well-arranged margin of these coloured plants. One cannot have too much variety in the design of these carpet beds, and this taste for originality may be freely indulged in, since the tone of colour in a pair of beds may be the same, although the design in each may be different. Particular attention should always be paid to the outline of the beds, for the best arrangement of colours it is possible to conceive loses much of its beauty, whether it be in a picture or a flower-bed, if the frame of the one, or the outline of the other, be of an inelegant contour; it is a sure rule that the more pleasing the form of each individual bed in a group the more attractive will be the whole arrangement of which the different beds form a part. This ought to be self-apparent, and yet after having seen most of the carpet bedding arrangements in the neighbourhood of London, one can come to no other conclusion than that such is far from being the case, sameness and imitative formality being the rule rather than the exception—a result which may be attributed in some measure, however, to the employment of similar materials. If one thing has forced itself on our minds more than another during the present summer, it is the fact that dwarf fine-foliaged plants are much better suited for adding permanent masses of rich colour to gardens during summer than the host of Pelargoniums, Calceolarias, Lobelias, Verbenas, and other flowering plants hitherto used for that purpose. If we want the grace of noble plant-form or variety of colouring, we must use hardy, herbaceous plants and half-hardy or sub-tropical vegetation, always giving the preference to such kinds as will permanently luxuriate in our climate all the year round, rather than to such specimens as are plunged out in June to drag out a wretched existence and become damaged by rough winds and heavy rains.

The following synopsis of the plants used in the carpet bedding arrangements here and in the London parks may be useful to those who wish to carry out the now prevailing fashion in warm, sheltered districts:—*Crimson and Purple*—Coleus Verschaffelti improved, Iresine Lindeni, I. acuminata, Alternanthera amœna, A. a. spectabilis, A. a. magnifica, A. versicolor. *Orange-red*—Nertera depressa, Alternanthera paronychoides, A. p. major, A. amabilis, A. a. latifolia. *Green*—Tagetes signata pumila, Mentha Pulegium gibraltarica, Sedum lydium, S. acre. *White*—Antennaria tomentosa, Gnaphalium lanatum, Leucophyta Browni, Centaurea ragusina, C. r. compacta. *Yellow*—Pyrethrum Golden Feather, Mesembryanthemum cordifolium variegatum, Stellaria graminea aurea, Sedum acre aureum, S. anglicum. *Glaucous*—Sedum glaucum, Echeveria secunda, E. s. glauca, Gazania splendens, G. s. variegata, Veronica incana. B.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Asteriscus maritima.—This is a dwarf-growing plant which bears golden-rayed flowers, each of which is as large as a florin. It is just now very attractive in Mr. Parker's Nursery, and ought to be added to every border of hardy flowers, being a free-blooming and thoroughly effective, hardy plant.—B.

Myosotis dissitiflora.—This lovely spring flower does not seed so freely as the common Forget-me-not, and birds are apt to pick up what seed it does produce. We therefore lay our old stock of plants in on a north border when lifted in spring in rows 1 ft. apart, and cover them with fish-nets. Thus situated they shed their seed on the soil, and by keeping it moist during summer we have some thousands of good plants now to select from.—J. G.

A Wet Climate Best for Clematis.—Clematises to be grown to perfection require to be very copiously supplied with water. In the wet climate of Dumfriesshire they grow and bloom with great luxuriance even on direct north aspects, where they continue in great beauty to the end of October; but they grow and bloom best of all when they are planted close to the door-steps of a hothouse—just in the walks, with some soil supplied at planting time—where they are swilled with water regularly two or three times daily. They can do with any amount of water, provided it be not stagnant.—D. T. D.

Drummond's Everlasting Pea.—In Lathyrus Drummondi we have a fine red Everlasting Pea. The flowers are of a bright carmine-red hue, several flowers being borne on the stalks which spring from the axils of the leaf-shoots. It is grown by Mr. Green, Hillfield Nurseries, Reigate, who states it is very scarce. It is perfectly hardy, but requires a cool, shady, and somewhat sheltered position, as hot sun and drying winds tarnish the peculiar beauty of the flowers. It well deserves a place in a select collection of hardy perennials.—"Florist."

Senecio pulcher from Root-cuttings—This plant, now opening its flowers in Mr. Parker's Nursery at Tooting, is a stately species, the flowers of which are fully 2½ in. in diameter, and of a rich crimson-purple colour with a yellow disc. The plant attains a height of from 15 in. to 18 in., the flower-stem being branched. It is not an annual, as has been supposed; and as the seed rarely ripens in this country, the period of blooming being late, it may be useful to know that it is readily increased by means of root-cuttings.—B.

Variegated Plants from Seed.—The list of these given by "F. W. B." (see p. 228) may no doubt be largely extended, especially if coloured-leaved plants be included as variegated. Of really variegated-leaved plants, the hardy Variegated Cress comes remarkably true from seed, and it is one of the most useful of winter decorative and bedding plants. The new Variegated Tobacco now growing at Chiswick is another that is found to come true from seed, as do also the pretty variegated Winter Kales. Then there are the fine parti-coloured Beets, and, not least, Dell's rich crimson-leaved Beet. Also the Perilla, Amarantus tricolor, Centaurea ragusina, different forms of Cineraria maritima, Echeveria metallica, &c. These are all commonly known as variegated plants.—A. D.

THE FRUIT GARDEN.

FIGS ON OPEN WALLS.

Although Figs have been grown in this country for hundreds of years, comparatively few people know what really well-ripened Figs are like, and in many cases there exists an unfounded prejudice against them. They are, however, both wholesome and prolific, and easily grown. In order to reap the full benefit of their continuous bearing habit they must of course be grown under glass; but on open walls or as standards, in favoured positions, their cultivation might be profitably extended, inasmuch as they will succeed in soils too hard and poor for almost any other kind of fruit tree; in fact, for open-air culture much depends upon providing such a root-run, for if planted in ordinary kitchen-garden soil, full of manure, the growth will be long, soft, and watery, and liable to be easily affected by frost, whereas firm, short-jointed wood stands our ordinary winters without any covering, and invariably produces abundance of fine fruit in autumn. We have good-bearing Fig trees here over 100 years old. They were originally wall trees, but they had been allowed to extend until they formed wide-spreading standards, which in that state bore good crops. They were cut down to the ground about twenty years since, and the young growths have been again trained to the wall, on which they form large, vigorous, and prolific trees that look as youthful as ever; in fact, like Vines, I believe that they may be considered young at 100 years old, as they are not liable to the weakening effects of insect attacks; and if killed to the ground by frost, they spring up again with renewed vigour. The remark is often made that Figs do best without pruning or training; and so they probably do if their habit, mode of bearing, and conditions under which they are placed be not taken into consideration. A Fig grower may be highly successful under glass, but if he adopts the same kind of treatment in the open air, he will assuredly get nothing but leaves and green fruit for his pains. By stopping the shoots of Figs under glass at the third or fourth leaf, we get excellent successional crops; but if Figs be stopped on open walls, the young fruit on the current year's wood becomes too far developed to stand the winter, and thus there will be no crop the following year. Therefore never stop any shoots, except those which are to be cut out at the following winter's pruning. I have lately gathered from open walls some of the finest Figs I ever saw, and from a position, too, when we could not get other fruit trees to succeed. The wall in question looks full south. We dug deep pits within 3 ft. of its base in space which is used as a foot-path and gravelled, and consequently the soil over the Fig roots is very hard. Thus circumstanced, the trees make short, well-ripened wood, and the heat reflected from some glass pits built in front of the wall ripens the fruit from three weeks to a month earlier than in more open positions. This wall is never too hot for Figs, and we have some with even more restricted root-room that bear good crops if well soaked with water when the fruit is swelling, for if allowed to suffer from want of moisture, it is apt to drop prematurely. Figs should, therefore, be mulched over the roots, and a few thorough good waterings should be given them when they are in full growth. The pruning and training adopted is of the simplest kind; in short, we only stop those shoots in summer that are getting bare at the base, and remove them entirely in the following spring. Figs must on no account be trained too thickly, as the foliage, which is large, must be fully exposed to light. I allow the current year's growths to grow away from the wall, as by nailing them in closely the embryo Figs are encouraged to swell, an occurrence which must be by all means avoided. As a protection from frost the easiest method is to unnail all the shoots and lay them down by the base of the wall, where they should be covered with Fern, Spruce branches, &c. In spring what pruning they require may be given them and the branches firmly secured by strong ties at the proper distance apart, keeping up an equal distribution of young bearing wood from base to top. Fancy modes of training are not applicable to Fig culture. As regards sorts, the Brown Turkey is both trustworthy and prolific; the White Marseilles is the finest kind, but it is not nearly so prolific. I have also lately planted Castle Kennedy and Black and Grizzly Bourjassotte, but I cannot yet say whether or not they are acquisitions. Positions suitable for Figs occur everywhere, for their foliage is as handsome as that of many climbing plants, and the attention which they require is about the least needed by any kind of fruit tree, while the chances of a crop are all in their favour, as they are late in starting into growth, and consequently avoid that greatest of all drawbacks to hardy fruit culture—inclement springs. A hot, dry summer like the present, which is so disastrous to so many other kinds of crops, will give us, with a minimum of labour, an abundance of luscious Figs in autumn. James Groom.

Henham Hall, Suffolk.

SMALL FRUITS IN TREE FORM.

Many of our most prominent pomologists assert that fruit trees of every description succeed best in a hot, dry climate when allowed to branch from the ground; that the action of the sun's rays on the long, naked trunk is highly injurious to the health and productiveness of the tree. Some even go so far as to say that the Apple, the most trustworthy of American orchard trees, will yield a far larger profit and show a higher state of vigour when trained in the shape of a large bush than when trimmed up as a tall standard, and they bring such convincing proofs as the growing trees to sustain their arguments. That there is a great deal of truth in this reasoning, as well as notable exceptions to the rule, we are forced to admit, but the system, as a system, is correct, and should be more generally carried out by fruit-growers in training their young trees than it is. One of the most curious instances of the standard form yielding better results than the dwarf, is exemplified in the new standard Currants and Gooseberries now on exhibition at the Centennial grounds in Philadelphia. These pretty little trees, for they are exceedingly ornamental, were planted in one of the beds during the past spring, have received no extra care, either in mulching or watering, and yet they have made a fine growth in every instance, and perfected very large crops of superior fruit. An unanswerable argument in their favour so far is, that there has never been the least symptom of mildew either on foliage or fruit, but whether this feature will remain permanent has to be tested; it seems really too good to prove true. The stock used for standards is the common Missouri Currant (Ribes aureum), trained to a single stem, and it is astonishing how the grafts appear to favour this species. The originator claims that the influence of the root is what prevents mildew from appearing, and I see no cause to doubt his arguments, as seeing is certainly believing. These little trees are not entirely new in America, as they have been tested in New Jersey for several years past, and, so far, with the most complete success. It is indeed a novel and very ornamental sight to see these miniature trees with their weight of fruit depending from the branches, and, in some instances, with both Gooseberries and Currants in tiers one above another of the largest size. Josiah Hoopes.

Gooseberries and Currants as Espaliers.—I saw a neat and excellent way of growing Gooseberries and Currants the other day at Coolhurst Park. The kitchen gardens there are divided into the usual compartments, and at the margin of each quarter, running parallel with the walks, are small posts fixed several feet apart and about 3 ft. high, to these are strained three lines of stout iron wire, openings being only left at the corners, sufficiently wide to allow a wheelbarrow to pass. The Gooseberries and Currants are planted 18 in. asunder, and three rods are carefully trained up the wires about 6 in. apart. These have reached the top of the trellis long ago, and are pruned on the close-spur system. Thus planted, they form an unbroken line from end to end, and present a very neat appearance, especially when loaded with fruit, which they were when I saw them on the 22nd of August. Prominent among the Gooseberries were the Warrington and the old-fashioned small Rough Red. Gooseberries and Currants managed in this way occupy no more space than a row of Parsley; the fruit can be gathered without having to step off the walks, and an ordinary length of netting dropped loosely over the top, touching the ground on both sides, acts as a thorough protection from birds. The trees in question have been planted about sixteen years, and judging from appearances they will keep in good condition for many years to come.—H. Harris, *Denne Gardens, Horsham.*

Victoria Nectarines at Welbeck.—I have never seen this noble Nectarine so well grown as at Welbeck, and it would be useful to many of us if Mr. Tillery would kindly tell us how he grows it so well. The Walburton Admirable Peach also furnishes quantities of superb fruit in these noble gardens.—V.

TWO VIEWS OF HOLLAND HOUSE.

We have several times alluded to the fact that sometimes one sees the most pleasing effects near the house on the side devoid of geometrical gardening. Where the house is surrounded by a series of geometrical gardens one is of course left without choice. At Holland House, however, we have, happily, on one side a simple green lawn with some fine trees not too near the house, and a straight walk along in front of the mansion. The wonder is that the designer should have spared so much simple beauty. If it be right to fortify one side of a house with elaborate geometry, why spare the other? The illustration of the pretty lawn front does not show the main charms of the lawn—its breadth and the sweet way in which it spreads away under the trees. We reproduce these illustrations from "Holland House," published by Messrs. Macmillan. The same thing is illustrated in many an English country seat, though unhappily the best side is frequently given to the stone, and banks, and water-squirting apparatus.

COTTAGE GARDENING.

The Pear.

The Pear is one of the hardiest and most vigorous of our fruit trees; it is capable of adapting itself to soil and situation even better than the Apple. But the situation must be well drained, or there will be a difficulty under any system of management in maturing the wood. On deep dry soil, there is no necessity for working Pears on the Quince. It is on shallow soils resting on wet cold clays which even when drained cause so much soft spray to be produced, that the value of this stock is seen and appreciated. In many respects there is a similarity between the treatment suitable for Pears and Apples; and much that I have written on the latter will be equally applicable to the former—as, for instance, the preparation of the soil before planting, and in the necessity of checking the descent of the roots into a bad subsoil, surface-mulching, especially where a surface-rooting, or, as in the case of the Quince, a moisture-loving stock is used. Summer pinching and thinning the fruit are all important matters in Pear culture, and success will in a great measure depend upon the way in which they are carried out. Pears are especially adapted for espalier training, and a good fruit-bearing tree is more quickly formed than even in the case of the Apple. But as the Apple does not easily assume a pyramidal outline, so the Pear is not readily converted into a dwarf standard. But where espalier training cannot be adopted, the pyramidal is the best and most useful form. The trees should be planted 6 ft. apart, and may be allowed ultimately to attain a height of 8 ft., which will be high enough for a small garden. Of course care must be taken that the tree is properly built up; as in the case of the espalier, if the leaders be allowed to grow too fast, the lower part of the tree will not be well furnished. A wire hoop fixed to three stout stakes will form a very good base for training. When the tree is first headed down after planting, the best and most centrally placed of the young shoots should be selected for the leader and trained up vertically, and the others should be trained at equal distances apart horizontally, and fixed down to the wire to form the base. It is important that a good foundation should be secured to the future tree before the second tier of branches is formed, and this is entirely a matter of pruning and training. Much can be done in summer about the end of July by pinching a strong shoot or drawing its point downwards, and by that means driving the sap into the weaker branches. The leader may be pinched when it has grown about 18 in., in order to throw the strength into the lower buds. At the second winter's pruning the leader must be cut back to within from 6 in. to 1 ft. of the base of the new wood, this depending entirely upon its strength and the strength of the tree generally. Again, the best shoot must be selected for the leader, and the others tied or linked down to the shoots made the previous year. This course must be followed until the tree has attained its allotted size. If it have proved successful, the shape will be a perfect cone, with the points of the branches assuming a weeping orpendent form. In the event of a good selection a small plantation of pyramidal Pears will in the course of a few years turn out to be a most interesting and profitable experiment, involving but a slight expense and an inconsiderable amount of labour, and that, too, of an agreeable kind. Pinching a strong shoot, and drawing its point downwards at the proper time, calls rather for intelligent observation than practical skill, as the term is usually applied, and the man who has had no experience in fruit culture, if thoughtful and penetrating, may obtain as much success as the practical cultivator, especially if the latter be imbued with prejudice and preconceived notions, and too much given to rule-of-thumb work.

Lawn front at Holland House.

The Apricot.

In districts where the Apricot generally fails on the open wall it may often be seen flourishing against the gable end of a warmly situated cottage or farm-house. The chief drawbacks to the successful cultivation of Apricots are unsuitable soil and an unfavourable climate—the latter usually exercising more influence than the former. But soil that is unsuitable may in a limited space be modified and altered in character at a trifling expense, while climate may, to a certain extent, be ameliorated by shelter and selection of the most favourable sites for planting. It will, I think, be readily conceded that the walls of any dwelling or stable are more warmly situated, and consequently enjoy a better climate than most garden walls, especially where the latter are of a considerable length, with no arrangement, either temporary or otherwise, to counteract the effects of the keen cold currents that rush along their sides. In planting Apricots or other fruit trees against either cottages or farm buildings, the soil should first be thoroughly broken up at least 6 ft. in width from the wall, and 2 ft. deep. If of fairly good quality, that is, neither clay nor sand, nor one in which either predominate to an injurious extent, and if the subsoil be dry, which in most cases it would be close to a dwelling-house, the trees may be safely planted without any addition whatever; and the fact of the soil having been previously unoccupied by fruit trees will make their early growth rapid and vigorous. On very retentive soils, in order to insure the health and fruitfulness of the tree, it will be better to be content with a shallower border, and that might be raised 6 in. or so above the ordinary ground-level. Concrete 4 in. in depth should be placed over the bottom of the hole, resting on the firm, unmoved subsoil, to keep the roots from penetrating it, and to compel them to take a horizontal direction. Some efforts

should be made to renew a portion of the soil where it is bad, and there is scarcely a place where a few barrowfuls of fresh turfy soil may not be had, if looked sharply after. Whilst speaking of shallow borders, I may say whoever adopts them should see that the trees do not suffer from drought in a dry season. The necessity for this has often been overlooked, and the trees have become stunted and starved without the cause being suspected. No doubt deep rooting, even on good soils, is a disadvantage in some respects, for the nearer the roots are to the surface the more manageable is the tree. Mulching and watering must not, however, be neglected, more especially when the trees are heavily cropped. It need hardly be stated that as water enters largely into the composition of all fruits, unless it is freely given in hot summers, the fruit must be small. It is the same with cultivated fruits as with domesticated animals, when in a wild state they can cater for themselves, but under more artificial conditions and circumstances their wants must be provided for. The best form of training for all stone fruits is what is commonly termed the fan shape, and although we may take it as a general principle that the less the knife be applied to Apricots the better, still the tree must be headed back in its early stages to insure the necessary breaks for clothing the bottom; if this be not done the bottom of the wall will always remain indifferently furnished. Experience has proved that a good deal may be accomplished in training by keeping the middle of the tree always open, thus diverting the sap as much as possible to the lower limbs. I may refer the reader to what I have previously written in this article on summer pinching. Often where Apricot and other stone fruit trees have been indifferently progressing, a dressing of lime and soot over the borders and lightly forked in has been found of great service to them. Lime rubble from old buildings might with advantage be mixed with the soil in planting young trees of Apricots, Peaches, and Plums, as these fruits do best in a calcareous soil, and soot is a stimulant especially invigorating and suitable without encouraging grossness of habit. It is also a very good remedy for nearly all insect pests, and may either be mixed with soft water, and syringed over the trees, or the trees may be dusted with it in dull, showery weather. Of course this mode of application is not suitable after the fruit has reached a good size. But if insects be well kept down in spring, as they ought to be, there will be no necessity for using it afterwards. There are two main principles adopted by different cultivators in pruning and training the Apricot, Peach, and Plum with a view to fruitfulness:—One is to rely chiefly or wholly upon young wood laid in annually, and to disbud or remove all foreright shoots when only 1 in. or 2 in. long; and the other, whilst not ignoring the expediency and the necessity for laying in young wood wherever there is room, consists in taking the chief crop from spurs growing on the front of the branches which have been encouraged to develop themselves by the system of pinching and pruning adopted. The latter is the plan most generally practised, and will, I think, be found most suitable for those who have not had the advantage of a special training in fruit culture. Whether it be on artificial or natural spurs, we have all one object in view, viz., to secure a crop of fruit, and that system that gives us the best chance of success with the least trouble must be undoubtedly the right one to adopt. But in either case the necessity for disbudding exists, and ought to be carefully attended to. Where the crop is taken indiscriminately from spurs, both on the young and old branches, the disbudding in spring should be limited to thinning out the young shoots that push in profusion all over the tree. This should be done when the shoots are an inch or so long, when they can easily be rubbed off with the thumb and finger, without running any risk of leaving any permanent wound in the bark of the branch; pinching or summer pruning will afterwards be an important item in successful management, but to this I have already referred very fully.

Geometrical Garden at Holland House.

The Peach and Nectarine.

Peaches are not commonly grown in small gardens. Perhaps to the unskilled fruit-grower their pruning and training present more difficulties than other kinds of fruits; but when the principles of disbudding and summer pruning have been mastered, there should be no other serious difficulty. Given a good border 2 ft. deep, free from stagnant moisture, with the bottom made impervious to the roots, wherever the subsoil is unsuitable, the whole future of the tree depends upon keeping down insects, thinning the fruit, and in carefully regulating the spring and summer growths. These are matters that an average amount of intelligence, rightly directed, will find no difficulty in successfully carrying out. What is termed disbudding is simply removing the surplus shoots in spring, when about an inch or so long, and in that stage they can easily be pinched off with the thumb and finger. Its object is to concentrate the strength and force of the tree into, comparatively speaking, a few channels, leaving only as much young wood as can find room for full development. If the branches be too thickly placed the wood will not only be weak, but will probably be imperfectly ripened, with the usual accompanying result of weak and imperfect flowers. In cold situations disbudding must be cautiously done. If a tree be denuded of too much foliage at one time, it chills the system too much, and any check in early spring always makes the trees more susceptible to the attacks of green and black aphides. It is best to commence by removing a few of the foreright shoots—that is, the shoots that break direct from the front of the branches; in a few days

some more may be taken off, and so on, going over them frequently, until all wood not required for the next year's crop is removed. Some cultivators lay a good deal of stress upon selecting the shoots that are to bear the crops of fruit next year on the upper sides of the branches. It should be understood that the young shoot should be left as close to the bottom of each fruit-bearing branch this year as possible, for the purpose of fruiting next; and in a well-balanced tree, well filled up at the autumn or winter pruning, the shoot that bore the fruit this year should be cut off, to allow the young one to take its place, and so the tree will be annually renewed with bearing wood. With reference to the principle I have alluded to of always laying in the young shoot on the upper side of the branch, whether it has or has not any influence upon the well-being of the tree, it certainly tends to impress upon the mind the importance of working according to system, and so far it may be an advantage. Having decided which shoot is to bear the crop next year, all the others should be gradually removed to give room to lay it in; the leader alone should remain; but if the tree have covered its allotted space, that also should be pinched back to four or five leaves, but a few must be left beyond the fruit at the end of the shoot to cause the sap to circulate, otherwise the fruit will not swell properly, but will probably drop off prematurely. In some cold districts the Peach, instead of being closely disbudded in the way I have described, has only some of the shoots thinned out and the others pinched back to three or four leaves, which not only forms a shelter to the young fruit, but also in unfavourable situations gives two chances of securing a crop, for the Peach will fruit on artificial spurs as well as the Apricot or Plum.

Pruning the Peach.—As soon as the fruit is gathered, all the small shoots should be unnailed, and all the fruiting wood cut back to the point whence the young wood starts; unless there are vacancies to fill up, there is no occasion to wait for the falling of the leaves to do this, as I believe the sooner this is done in autumn the better the young wood will ripen; but shortening of the young wood had better be delayed till February for two reasons:—First, because after the buds have swelled a little there will be no difficulty in distinguishing the flower-buds from those that produce wood only, and it is important to cut each shoot back to a wood-bud, as without a leader the fruit, even if it set, will be flavourless; and secondly, leaving the shortening till the buds are pushing, and leaving the tree unnailed till the last moment, has a tendency to retard its flowering, and a few days' delay in the case of severe weather sometimes saves the crop. The young wood should be cut back one-third, one-half, or two-thirds, according to its strength and firmness; always cut back to well-ripened wood.

The Plum.

There is scarcely any fruit so accommodating as to soil or situation as the Plum, and not only has it these advantages, but if the fruit be thinned out when the trees are overloaded, and only known good and prolific kinds planted, it is a profitable crop to grow. The Plum tree is not so long-lived as the Apple or Pear, but it comes sooner into bearing. The wind is often destructive to old standard trees, for as age creeps on them the branches become more brittle. When this is the case, if the main trunk be healthy, I have often seen new life and vigour infused into old trees by heading them down, as they break readily out of the old wood. If this heading-down process be extended over two or three years, the trees will scarcely feel the check, and the gradual thinning will prevent the total loss of the crop, as the young wood on an old tree commences bearing immediately. But dwarf trees are the best to plant in small gardens; they bear well when trained in the bush or pyramidal form, and small or moderate-sized trees are easily protected when large trees must take their chance. So far as profit is concerned, I believe a plantation of Victoria Plums will yield a larger return for the outlay than any other crop, but for home consumption it will be advisable to add a few other kinds in order to extend the season of bearing. As wall trees, Plums will grow and bear well on any aspect, and it often happens that trees on a north aspect will bear abundantly, when those on other aspects fail; this is due in some measure to late blooming, and also to the gradual rise of temperature on a north aspect after a cold, frosty night in spring. The sun does as much harm as frost if its rays fall on a frost-smitten tree early in the morning, and it is in the shade imparted by a thin flimsy covering warding off the sun's rays in the early morning that a crop has been saved as much as by the protection afforded from frost. The pruning, training, and summer management of the Plum so much resemble those already given for the Apricot, that I need not refer to them at greater length here.

The Cherry.

The May Duke and the Morello are the kinds best suited for a small garden; they may be grown in the bush form on the Mahaleb stock or fan-trained on a wall. In a warm corner against a wall the May Duke comes in early and often bears profusely. Not far from where I am writing there is a May Duke Cherry against the front of a cottage; I believe when it was planted little or no preparation was made for it, and the immediate space over its roots is partly paved and gravelled; yet the crop of fruit that the tree annually bears is something marvellous. No doubt the soil is suitable, and the hard, firm surface has much to do with its prolific habit. What I have seen in this way leads me to the conclusion that there cannot be a greater fallacy in fruit culture than to suppose that it is necessary to dig and delve over or amongst roots. It may do no harm the first few years, or rather I should say, no perceptible injury is done, but if anything beyond a surface cultivation be carried on it must drive the roots downwards. When once a tree settles down into a bearing condition the roots should not be disturbed in any way, and no implement beyond the hoe should be used during summer, and where a little mulching can be put on in spring the use of the hoe may become unnecessary. What we require in a fruit tree is a medium annual growth—in fact, just a fair amount of extension in order to keep up the tree's health and vigour. And this is best secured by a firm soil and light annual top-dressing, but no manure should be placed in contact with the roots, as the chances are the growth will become too gross, and if so, farewell to fruit bearing till the tree has been lifted and root-pruned. It is better to avoid the necessity for this if it can be done, which it may be, by a fine soil and judicious summer pinching. The Morello is a very prolific Cherry, seldom fails to bear, and is especially adapted for a north aspect. In September, when the fruit is ripe, it is often worth from 1s. to 1s. 6d. per lb., and the trouble required is but small. The fruit is produced on the young wood, and the disbudding and pruning recommended for the Peach are quite suitable for this Cherry. One of the chief faults in its management, observable almost everywhere, is laying in too much wood. Overcrowding the wood does not produce more fruit, but the reverse, and it tends also to debilitate the tree, and is often the cause of branches dying off in summer.

E. Hobday.

HYBRIDIZATION OF THE STRAWBERRY.

By E. W. Durand.

The first step is experiment; combinations must be made to ascertain the qualities that will harmonise. You must find out the nature of the material with which you have to deal. You will perceive this first step requires years of trial and trouble, yet with a knowledge of the general results of combination, you are masters of the situation; every step is a step in advance. Of course experiments must be sufficiently extensive to cover any chance of a backward step. With a knowledge of the qualities of various plants, and the effect of their combinations, you may proceed with the plants in pairs—a staminate or perfect flower with a true pistillate, at sufficient distance from other plants to insure isolation. With a number of couples judiciously selected, you will be able to procure trustworthy plants for next year's combinations. Pursue this course persistently, and although you will meet with sufficient vexation and trouble you will be rewarded in the end. Do not employ the same plants or the same parentage too long, introduce new blood as often as possible, but not without sufficient knowledge of their qualities (by previous acquaintance) to make your combinations somewhat certain. The greatest dependence must be upon the pistillates; and while propagating from those you know to be trustworthy, it is well to try the prominent new varieties in the way of staminates, and be sure of their qualities before employing

them as breeders. I would not advise the planting of the seed the same year as produced, there not being sufficient time to determine anything; you may get some plants sufficiently forward to bear the next year, but it will be by a forced, immature growth, that will mislead rather than give an estimate of true worth. My own plan has been to wash the seed well, dry it thoroughly, place each kind in a paper separately, number it, register the combinations, and place it in the seed-chest until spring. By this management the plants may attain sufficient size and age to bear naturally and properly the first year of planting. Great care must be exercised in the selections the first year, as it is almost impossible to determine which are valuable. The worthless ones of course are thrown out, the rest retained for years of trial. The pistillates are to be selected and subjected to various tests for future use; their qualities noted, watched, and changes registered, before any safe conclusion can be arrived at; meantime the new combinations are to be considered. Of course, when produced they must be kept separately from the others, otherwise you will be unable to determine the effect of the various crossings. Another year brings new combinations, these again are to be separated from all others, and so on year after year, each adding new complications and subjects, requiring intense application and study that each step may be progressive, each year adding a link to the chain by which you are to arrive at the true theory of propagation. Some estimate of the labour involved in this matter may be arrived at by a retrospective view of the ground I have been over, commencing with a theory of my own, and wholly at variance with that proposed by the late Mr. Seth Boyden in the year 1859. The first year I made two crossings, since which time I have increased to hundreds and thousands of experiments. I generally produce 2000 or 3000 new varieties each year—sometimes more, sometimes less—and have still under trial varieties originated in 1862, and from that time some from nearly every year since. From the mass of my productions, about 50,000 varieties, I have selections that keep my stock at between 2000 and 3000 varieties continually on hand. These, with my seedlings, and prominent leading favourites, keep me always busy.

A word of advice may be appropriate here to any engaged in this matter, who are not fully aware as to what may be necessary in the way of production that would demand attention, and to those also who have acquired the idea that large berries are deficient in flavour and inferior to small ones. That there have been many large kinds thrown upon the market, valued alone for their size, I am well aware; but that size has anything to do with flavour, I do not believe, except that a naturally small berry may be forced by stimulants to a large size, in which case even those of fine flavour will surely be tasteless. But with this we have nothing to do; it is those naturally large to which I allude, and which under proper conditions are as rich and finely flavoured as may be desired. The Black Defiance, for instance, originated in 1862, and exhibited at the great Waverley Strawberry exhibition against hundreds of competitors, although the largest berry there, was awarded the first prize as being the richest and highest-flavoured; and with my experience, I have never found any difference in flavour on account of size. New productions, to be of value, should measure from 4 in. to 8 in. in circumference, and should be of good form, colour, and flavour; very large specimens are not expected to be perfect in form, yet those of medium size should always be. The calyx should never be imbedded in the flesh, which should be sufficiently firm to carry well and be able to withstand all changes of our variable climate. The texture should be fine, flesh rich, with a moderate amount of acid, no more than sufficient to make it palatable with sugar as a table berry. The plant should be hardy, vigorous, large, and strong; of great endurance as to climatic change, and able to stand any amount of manure of the right kind. It should be a prolific bearer, with stalks of sufficient length to keep the fruit out of the dirt, and should bear its berries of nearly uniform size to the end. Any serious departure from such necessary qualities would be fatal to any new variety. From this stand-point one may judge how slight would be the chances of any accidental production. I have selected hundreds upon hundreds of new plants apparently superior to anything known, and have been compelled to throw them out in consequence of some slight deficiency, while in many desirable qualities they were perfect. As prominent instances of this kind I will mention one or two. Some ten years ago I selected for cultivation a plant producing immense berries with the idea that I should astonish the world; they were of such a size that people supposed they were Tomatoes. It was a profuse bearer, with very few small berries, and every desirable quality, except that of flavour; of course it was worthless. Another, seemingly with every desirable quality, was found to be gaining in fruit at the expense of foliage. I thought nothing of this trouble at first, but years of experience have convinced me of the folly of depending upon such plants. Time after time I have subjected such to various tests. Stimulate the foliage, it would be at the expense of the fruit; urge it to fruit, its foliage would fail. They are simply deficient in vitality, and should be abandoned at once. It is the inevitable fate of originators to meet with continual trials and vexations of this kind. I am acquainted with those who have been spending the greater part of their lives in this very thing, and yet have never produced anything of real value. An instance occurs to me of this kind, in the case of a friend and very prominent man in fruit culture. I questioned him as to his mode of proceeding: his reply was that he sowed the seed of the berries he exhibited, without regard to sex. He never did produce anything, and never would in that way, should he live a thousand years. My time-honoured friend and neighbour, the late Mr. Seth Boyden, to whom the Strawberry world is really indebted, was for several years inclined to question my mode of propagation by pairs, while he pursued a different course: that of placing a row of pistillates of various kinds, and a similar row of staminates of perfect flowers near them, as offering a greater opportunity for variety. He afterwards acknowledged to me that he was wrong; and in speaking of a friend who was pursuing this course, said he might go on in that way as long as he lived, and get nothing in the end. I repeat, if there be so little likelihood of valuable production under such care, what chance may remain for those who plant anything and expect wonders to grow out of it? It is simply a waste of time and labour, ending in disappointment. My object in this matter is to do away as much as possible with this useless proceeding. For those who commence at all, I would say, commence rightly, and you will be on the road to success; otherwise, never.

My course is to select my pistillates after years of trial, subject to severe tests, place them alongside such staminates as I think will harmonise with them and produce a certain desired effect. Another pistillate, the same as the last, is placed far from the last, with a different staminate, and so on until I exhaust the staminates I wish to test with that variety; of late years I have used but two or three kinds of pistillate plants. These last are a combination of excellence. A slight repetition may be necessary here in order to enable those interested to see the way clearly by giving an outline of the different causes pursued. The first is the general or false course. It is the one almost invariably taken, and consists in sowing the seed of any fine berry. If a staminate or hermaphrodite, of course it is self-fertilized, producing an inferior berry of the same character. If pistillate, fertilized by what? Anything, perhaps the poorest staminate in the whole collection; and, undoubtedly, if some of its pistils should receive pollen from the best in the bed, it would be in harmony or supply the various deficiencies. Now, as to the general course, that pursued by Mr. Seth Boyden and others, and which consists in having a row of pistillates of various kinds and a similar row of staminates; in this way the chances of success are increased. One may make a successful combination, but how are you to determine what this combination may be, and how are you to judge of effect in the way of progression, as essential to success? One may guess, but there is no certainty, while the chances are, that being improperly grouped, every one may prove unfortunate. Not so with the true method, that of propagating by pairs, each parent of which is possessed of certain distinctive features. The result is apparent; you pass from one to another and note the result. One is enabled to draw certain deductions. In future years exceptions are noted and general action corroborated, by careful and judicious selections one's progress is certain; and although one may meet with all manner of vexatious disappointments, it is nothing in comparison with the muddle one is sure to get in by an indefinite course; and in this, as in all things, by a well-directed perseverance one may surely attain the desired result.

That I have drawn a not very encouraging picture for beginners, I am well aware; that I shall discourage numbers, I am equally well aware. Yet I am not disposed to hold out encouragements without a solitary chance of success. That there are hundreds experimenting in a hap-hazard, chance kind of a way in this matter, I believe; yet in the present condition of things, that they may produce anything of value is, to say the least, extremely problematical. That the art is yet in its infancy, I also believe, but that it requires something more than the slipshod, disorganised manner of general propagation to bring it out, I am firmly of opinion. That it requires intense study in the way of experimental combination, those having experience will no doubt willingly testify; also, that to ensure success it requires an instinctive appreciation of the principles and properties of plants and their combinations as essentials.

Our Friends and Foes.—In all the rural districts of France a proclamation has been posted on the signboards and at the corners of the roads, headed with the imposing title, "Ministry of Agriculture." This placard, which is intended for the guidance of

the French cultivator, reads as follows:—"Hedgehog: Lives on mice, small rodents, slugs, and grubs, animals hurtful to agriculture. Do not kill the hedgehog. Toad—cultivator's assistant: destroys from twenty to thirty insects an hour. Do not kill the toad. Mole: is continually destroying grubs, larvæ, palmer-worms, and insects injurious to agriculture. No trace of vegetation is ever found in its stomach. Does more good than harm. Do not kill the mole. May-bug and its larvæ or grub: Mortal enemy of agriculture; lays from seventy to eighty eggs. Kill the May-bug." This notice also deprecates the destruction of small birds, which are, according to the authority of the Minister of Agriculture, the only allies on which the cultivator can depend for the extirpation of vermin. Children are warned to abstain from birds'-nesting, and are at the same time advised that they will be paid twenty-five centimes for every 500 May-bugs which they may place in the hands of the *garde champêtre*. It remains, of course, to be seen what effect this ministerial edict will produce. We may add that in some parts of this country—the Eastern Counties for instance—blackbirds have this season been driven, through want of insect food, to attack hardy fruits, which, where not netted, are being eaten up. Even unripe Pears do not escape their depredations.

The Fruits of California.—In Mr. Downing's noble work on the "Fruits and Fruit Trees of America," just come to hand, we find the following note on the state of fruit culture on the Sierras. Since the publication of the recent edition of this book, the author has visited California, and his observations in that newly developed region have elicited the facts that fruit trees grow much faster there, and come into bearing much earlier than with us, and it may be fairly inferred, therefore, that they will not be as long-lived. The same varieties of Apples, Pears, Peaches, Plums, Apricots, Cherries, &c., are grown as with us; but all kinds of fruit, especially some kinds of Apples, do not succeed equally well as in the Eastern States. The following sorts were considered most profitable: Williams' Favourite, Early Strawberry, Red Astrachan, Early Harvest, Winesap, Rawles' Janet, Boston Russet, White Winter Pearmain, Smith's Cider, Yellow Bellefleur: Newtown Pippin best and most profitable; the Northern Spy and Baldwin had failed. The fruit is rather larger, fairer, and handsomer, and the quality equally good, except Strawberries and Blackberries, which were not quite as high-flavoured. Grapes are grown extensively in many localities, and succeed admirably. They are grown in the open air, without protection, requiring but little labour compared with our system of cultivation. They are grown in the tree form on stems or stumps from 2 ft. to 3 ft. high, and those from ten to fifteen years old are from 5 in. to 6 in. in diameter. The Vines are planted from 7 ft. to 8 ft. apart, each way. They are pruned annually back to the stems, and when the new shoots have grown 5 in. or 6 in., all are thinned out, except ten or twelve of the strongest, and in most vineyards they receive no further care till gathering time, except to keep the ground clean. In some orchards that had been neglected, the trees were failing, and I was told that if the ground were not cultivated and the trees cared for, they soon died. We found Figs abundant and of fine quality in nearly every locality we visited. English Walnuts, or Madeira Nuts, Almonds, and Olives are grown successfully in most places.

The Lavender Crop.—The late excessive heat has had a good effect on Lavender, which promises to be unusually abundant this year. A correspondent of one of the daily papers recommends those who have seen and admired the flower farms of Provence—and he might have added those of Tetuan and Tangiers—to pay a visit to the Lavender fields planted about half a century ago outside the town of Hitchin. Mitcham, in Surrey, likewise enjoys old-established celebrity, not only for the extensive cultivation of this useful plant, but for the preparation of oil of Lavender, which, as all of us know, forms a highly important article of commerce. Not half so much attention is paid by the public at large to Lavender as it deserves. Of the different species which have been described by botanists only two are commercially valuable, the common Lavender (Lavandula vera) and the French Lavender (L. spica). The former yields the fragrant oil, the solution of which in spirits of wine is called Lavender Water; while the latter is used by painters on porcelain, and in the preparation of certain varnishes. Still Lavender has a right to complain of the slight amount of popular homage paid to it. The truth must be told—it is going out of fashion. Yet chemists declare that Lavender flowers constitute no less than 10 per cent. of the ingredients in Eau de Cologne, the remaining components being Balm, Mint, Marjoram, Thyme, Rosemary, Hyssop, Wormwood, Angelica, Cardamoms, Juniper berries, Anisofennel, Caraway seeds, Cinnamon, Nutmegs, Cloves, Orange peel, Jasmine, Essence of Roses, and Bergamot. It is at the same time questionable whether this wonderful combination can in the long run approach in simple fragrance our good old English Lavender Water.

PLATE XXXVI.

SELECT MASDEVALLIAS.

By F. W. BURBIDGE.

We have here a group of some seventy or more Alpine Orchids from the New World, most of them of the neatest possible habit, and their flowers are in some cases very large in proportion to the size of the plants. Nearly all are natives of the Andes, of New Granada, Colombia, and Peru, and are for the most part found at considerable elevations above the sea-level, one or two indeed approaching the snow-line, but scarcely so near as Epidendrum frigidum and the purple-spotted Oncidium nubigenum; one species, M. floribunda, is a native of Mexico. The genus Masdevallia is a very characteristic one, having been constituted by Ruiz and Pavon as long ago as 1794, the first species so named being M. uniflora, a little Peruvian plant. The three outer lobes of the perianth or sepals are nearly always connate or fused together at the base, and their points are very often elongated into slender tails. The petals and lip are very small, resembling those of Pleurothallis, and nearly always hidden down in the tube formed by the connate sepals. In some species the lip is balanced on a delicate hinge, after the manner of the pseudo-bulbous Bolbophyllums, a device which may possibly tend to their being duly fertilised by insect agency. Masdevallias are amongst the most easily cultivated of all Orchids; they succeed well with the Pescatorean and crisped-petalled Odontoglossums; indeed, some species are found in the same zone with the Odontoglossums, but as a rule the Masdevallias occupy a zone above both them and Oncids. They, however, succeed well together in our gardens. On the highlands of Peru and New Granada Masdevallias attain an altitude of 9000 ft. to 10,000 ft. above the sea-level, and are exposed to varied and often very sudden changes of temperature. In growth they are neat and compact, occupying but little space, and they last in flower for several weeks, or often months at a time; indeed, when well managed, they will keep on growing and flowering nearly all the year. Many of the species of Masdevallia bear comparatively large, brilliantly-coloured flowers,—some of glowing scarlet, like a bar of red-hot iron; others of the sofest silvery lake, purple, red, yellow, green, or of the purest white; and the plants themselves are of remarkably free and rapid growth when cultivated in a cool, moist temperature. Some Masdevallias, though interesting, are scarcely worth cultivating for their blossoms; such is M. civilis, a green-flowered kind, while other dingy species, M. caudata and M. coriacea, large masses of which have recently been imported and sold at Stevens', also have greenish flowers, and are quite destitute of fragrance. If we were requested to name the six most distinct and beautiful of all the Masdevallias in their order of merit we should certainly select the following:—M. Veitchi, M. Harryana, M. Davisi, M. ignea, M. amabilis, and M. tovariensis, without which indeed no collection of these plants is complete. Those who wish to study the small-flowered and less showy, but equally interesting species from a botanical point of view, should refer to M. Edouard Morren's enumeration or monograph in the "Belgique Horticole" for 1873, p. 353, which serves as an admirable index to descriptions and figures of all known species of Masdevallias.

Propagation.

The propagation of Masdevallias has hitherto been mainly effected by the division of strong and healthy plants. Like Cattleyas and many other Orchids, Masdevallias have thick, fleshy, oblong, linear, or spatulate leaves, borne on an elongated petiole (which in this genus, however, is not swollen out into a pseudo-bulb as in the Cattleya), and each leaf-stalk has a bud at its base. Most of the strong-growing kinds are freely propagated, each single leaf with the growing bud at its base soon forming an established plant if carefully separated with a root or two and potted off into small pots of peat and living Sphagnum Moss. Some of the species, such as M. ignea and M. Harryana, have been imported so plentifully that there has been but little occasion to cut up plants for propagating purposes, as they have been sold at Stevens' rooms at very reasonable prices. Seedling Masdevallias have been raised in this

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MASDEVALLIA LINDENI.

country, but none have as yet bloomed. In order to obtain seeds artificial fertilization is necessary, and owing to the smallness, and in some cases inaccessible position, of the anther-case and stigmatic surface, some little delicacy and ingenuity are requisite in order to succeed. Reference to the illustration inserted below may render the matter more simple to all who may wish to commence fertilizing or hybridizing Masdevallias or other Orchids. Fig. 1 represents the column, and at the upper end of this organ, common to all Orchids, is situated the anther-case (*a*), both back and front views of which are here shown. This anther-case forms a cap, and contains the round, waxy masses of pollen (*d*); by lifting up the little case or cap (*a*) from the end of the column either with a toothpick or other pointed instrument, the pollen masses, which are scarcely the size of Millet seeds, will fall out. If the toothpick be dipped in the nectar of a Fuchsia or other flower, the pollen will stick to the point and can then be transferred to the stigmatic surface, which is a glutinous cavity situated just beneath the anther-case or cap, and separated from it by the top of the column, and in some Orchids, as in Vanilla, Angræcum, &c., by an elastic membrane, the object of which is to prevent the pollen falling over into the stigma, and thus to render either artificial fertilization or hybridization necessary. After the pollen is thrust into the

1. Column showing anther case (*a*), which contains the pollen masses (*b*) and stigmatic surface (*c*); *d* are the pollen masses enlarged.
2. Seed-pod, natural size, and section of the same enlarged.

stigmatic cavity, the latter in many cases (notably in the case of Odontoglossum and Phalænopsis) closes up, the two sides clasping over firmly, so that nothing short of actual force and mutilation can remove the pollen. This seems to be a wise provision to prevent the pollen being dragged from the stigma by insects or damaged by rain or other moisture after the floral segments or envelopes decay, which they do immediately on fertilization being accomplished, and the ovary or seed-vessel (2) at once commences to increase in size. It is advisable to save seed only from strong and well-established plants, and one seed-pod on a plant is amply sufficient. Every care must be taken to keep the seed-bearing plants in a robust and healthy condition, otherwise the seed-pods will ripen prematurely, and the seeds will all prove abortive. This is a very important point, which many who attempt to raise seedling Orchids are apt to overlook. When the seed ripens the seed-pod assumes a brown colour, and the valves of the capsule split open, showing a multitude of light brown sawdust-like seeds within intermixed with woolly fibres. The best time to sow the seeds of Masdevallias and other Orchids is as soon as they are ripe, and the best medium on which to sow them is an Orchid-pot covered with fresh living Sphagnum Moss, which must never be allowed to become dry, or the safety of the embryo plants will be very much endangered. All Orchid seeds germinate best in a warm and humid temperature; indeed, if once the germinating seeds become dry, it is a fatal mishap, for they never recover.

Culture.

The culture of nearly all the Masdevallias is so simple and inexpensive that these, together with Odontoglossums, are the best of all Orchids for amateur cultivators. They grow best in a cool and humid atmosphere and like Odontoglossums and Disas cannot endure bright or direct sunshine. A winter temperature of from 55° to 60° suits them admirably, and during the hottest of summer weather the nearer the thermometer can be kept at from 65° to 70° the better, for Masdevallias, like many other Orchids from elevated localities in both the New and Old Worlds, are often injured when grown under glass by our dry hot summers. A cool and moisture-laden atmosphere, with ample, but not draughty ventilation at night as well as during the daytime, is the best treatment for Masdevallias and Odontoglossums, with which they are in general associated in our gardens. Some growers, however, like Mr. Day at Tottenham, and Messrs. Veitch at Chelsea, have houses especially devoted to these charming little plants. A compost of fresh fibrous peat, having a small addition of dried horse-droppings and turfy loam, suits them admirably; and it will be found best in practice to pot them in small pots, thoroughly well drained, for like most other Orchids, they require liberally supplying with moisture when growing, both at the roots and in the atmosphere; but if the compost become sour or stagnant through bad drainage, they will speedily succumb. Mix a fair proportion of coarse river-sand with the compost above recommended, and cover the surface of the pots with living Sphagnum. Some growers use the ordinary white sand, but this is much too fine, and allows the compost to become soddenand sour too soon. I would here remark that living Sphagnum is one of the best natural tests that can be used to ascertain the humidity of the atmosphere. I never saw it grow freely in any hot-house that was not well adapted for the requirements of Orchids; it soon dries up and dies in a hot, arid atmosphere, but will luxuriate in almost any heat, provid the atmosphere be kept constantly humid. Overpotting is an evil to be guarded against in the culture of all Orchids, but especially so in the case of these plants. Living Sphagnum Moss is an important ingredient in the compost of all the cool-growing Orchids, as it preserves an equable state of moisture about the roots, and at the same time affords them just the sort of shade and shelter they like. Slugs are very fond of the young growths of Masdevallias, and these pests must be carefully guarded against. When growing it is next to impossible to give these plants too much

Veitch's Masdevallia (M. Veitchi).

moisture at the root or in the atmosphere. Pure, bracing, moisture-laden air, with heavy dews at night, and often heavy rains, are their natural conditions on the New Granadian and Peruvian Andes, and these conditions, imitated as nearly as may be, conduce to their vigour in our gardens.

Veitch's Masdevallia (M. Veitchi).—Of all the Masdevallias this is undoubtedly the finest, and it was the great beauty of this plant which induced the demand for other species among amateurs.

It is a native of the Peruvian Andes, and it is not yet surpassed in beauty by any of the other kinds. The plant is a robust grower, and bears its large solitary flowers at different seasons of the year, but generally in the spring, the individual blooms being fully 3 in. in length, and of a brilliant orange colour, the outer halves of the lower sepals being set with deep bluish-purple hairs, and the effect of this thin velvet-like pile is to give an indescribable richness and inimitable brilliancy of colouring, every change of position or light adding new beauties to the flower. M. Veitchi grows freely in a cool Odontoglossum-house during the summer months; and, in addition to an abundant supply of moisture in the atmosphere, requires copious waterings at the root. During the winter a Cattleya-house, where the temperature does not fall below 55°, is the best place for it, but at no time, summer or winter, must it be allowed to become dry at the root. It was thought at one time that this plant would ultimately form large specimens in great pans, and produce from twenty to thirty flowers in a single plant, but Masdevallias always develop to the best advantage when grown in very small pots, and soon show signs of decay if overpotted; and it is a singular fact that large masses rarely continue in health long, and require great care in watering, otherwise they rot in the centre or where the growths are most crowded. The best way to obtain large specimens of these plants, either for exhibition or decorative purposes, is to grow a number of plants in small pots, and these can easily be grouped together in a pan when in bloom, and the pots concealed with a layer of fresh Moss.

Harry Veitch's Masdevallia (M. Harryana).—This plant,

Harry Veitch's Masdevallia (M. Harryana).

whilst being one of the most robust and floriferous of all the species in the genus, is also plentiful in our gardens. It is one of the most variable of the species in cultivation, the colour of the flowers ranging from a bright silvery lilac through all the shades of purple to a deep rich crimson. When well grown it is but little inferior to M. Veitchiana in beauty, but it is quite different in colour. The flowers are about 2 in. in breadth, the extreme length of the tails being from 3 in. to 4 in. in length. They are borne singly on scapes 1¼ ft. to 2 ft. in height. The leaves vary from 6 in. to 12 in. in length, and are of a bright green colour. The large specimens of this plant, bearing from twenty to thirty flowers, sometimes seen at flower shows, are obtained by growing plants in small pots, each of which bear from three to six flowers, and these are plunged together in a large pot or pan of Sphagnum Moss for exhibition purposes. It is right to explain this plan, because amateurs, seeing these large specimens apparently growing and flowering luxuriantly in large pots, attempt to grow their plants permanently in the same manner, which generally results in failure.

Linden's Masdevallia (M. Lindeni).—This plant is undoubtedly nothing more than a distinct form of the last-named kind, which it resembles in habit and time of flowering, The blooms are generally smaller, and the colour is always a glowing silvery lilac, a tint which up to the present it seems impossible to obtain in lithographic printing. The plant grows well in small pots treated like its congeners, and is certainly one of the most attractive kinds in the whole group. Our plate scarcely does justice to the plant in point of colour, indeed, all the species which have iridescent or glowing colours are a perpetual stumbling-block to artists and colour printers. Like the last-named, this splendid variety is a native of the upland regions of Colombia, and it well deserves a place in the most select collection of these charming plants.

Davis' Masdevallia (M. Davisi).—This is a most free-flowering species from Peru, and was first exhibited by Messrs. Veitch & Sons in 1875, the specimen bearing twenty fully developed flowers. The

Davis' Golden Masdevallia (M. Davisi).

foliage of this plant is peculiarly narrow, rarely exceeding ¾ in. in width, and gradually narrowing to the base. The flowers are solitary, on slender, nodding scapes, and about 1 in. in width. The colour is clear orange-yellow, being quite distinct in this way from any other known species. The figure in the "Botanical Magazine" greatly exaggerates the size of the flowers, those on the plants exhibited by Messrs. Veitch at Kensington not being half the size. This species was discovered near Cuzco in Peru by Mr. W. Davis, after whom it is named, and it deserves cultivation along with the darker and richer coloured kinds, such as M. Lindeni or M. Harryana and its varieties. Our figure represents the flowers of this species and a reduced view of the plant. The yellow flowers, abruptly narrowed lower sepals, and linear, fleshy leaves, serve to distinguish this plant from its allies. This plant received a first-class certificate on August 12, 1875.—M. Davisi, "Gardener's Chronicle," 1874, p. 710-11; "Xenia Orchidacea," III., t. 3; Bot. Mag., t. 6190.

The Snowy-white Masdevallia (M. tovarensis).—This is one of the most distinct and beautiful of all the large-flowered Mas-

The Snowy-white Masdevallia (M. tovarensis).

devallias, its snowy-white flowers being each about the size of a shilling, the sepals lengthened out into slender tails, and borne two or three together on the apex of a three-cornered scape. This species, like M. ochracea and one or two others, has the habit of bearing a second crop of flowers from the apex of the old persistent scapes, something after the manner of the well-known Hoya carnosa or

Cyrtoceras reflexum. The flowers are of the purest white, glistening like a snowflake, and a good specimen forms a very attractive object for grouping with the crimson, magenta, orange-red, and yellow-flowered species. Its season of blooming is during the winter months. Mr. Bockett, of Stamford Hill, once exhibited a little specimen at South Kensington, bearing thirty-six flowers, and during the past winter I saw a plant at Messrs. Veitch & Sons which bore more than seventy of its pearly flowers. When thus seen in perfection, it is one of the most attractive species. Our illustration shows the general habit and contour of the flowers. In some gardens this species is known under the name of M. candida, and, as implied by its more generally accepted name, the plant is a native of Tovar, in Columbia. It luxuriates under the same treatment as its congeners in a cool and humid temperature, and well deserves careful culture.—M. tovarensis, "Botanical Magazine," Vol. 91, t. 5505; "Gardeners' Chronicle," 1865, p. 915; 1871, p. 1421.

The Glowing Masdevallia (M. ignea).—This is a free-growing and distinct plant, a native of New Granada, whence it was originally imported in March, 1870, and soon after it flowered in several collections in this country, including Mr. Day's at Tottenham, and Messrs. Veitch's at Chelsea. This species rarely exceeds 1 ft. in height, having the typical leathery leaves bluntly bifid at the apex, and of a rich green colour. The flowers are solitary, on slender nodding scapes, the latter, as a rule, slightly exceeding the leaves in length. The flower itself is roundish, about the size of a shilling, the lower sepals being connate for about half their length, and the

The Glowing Masdevallia (M. ignea).

characteristic tails at the apex are here reduced to narrowed points. In colour these lower sepals are orange, or say cadmium-yellow, suffused towards their points with very bright red; and here, in relation to this, a curious fact must be pointed out. As we have said, the ground-colour of the flower is vivid orange-yellow, and with this the red colour of the veins and points of the lower sepals does not blend, but red cells are mixed with the yellow cells, and the result is a vivid luminous reflection or lustre, which charms the eye at first, but soon tires it, and makes one long to gaze on the cool Sphagnum Moss and verdant foliage of the Alexandrian Odontoglots as a relief. Reichenbach, the great authority on Orchid lore, says the colour of this flower is a "dazzling scarlet, mixed with orange-scarlet, too dazzling to look at long;" and Dr. Hooker remarks, that "it thus suggests a transition from the red heat of M. Veitchiana to a white heat;" and there is much truth in this remark, since the nearest approach to its colour is that of a red-hot iron. Its close allies are M. Veitchiana and M. amabilis, but from the latter it is readily known by its upper and smallest sepal bending over the face of the flower, as shown in our engraving, while in M. amabilis it is thrown back. From M. Veitchiana it is known by the more rounded flowers, and by the absence of the purple papillæ. It is one of the most profuse-flowering species in the group, and varies with small and large kinds of the usual colour; one variety, named Marshalliana, bears yellow flowers.—Bot. Mag., t. 5962, from a large-flowered variety, which flowered with Mr. W. Bull in February, 1872.

Dona Estrada's Masdevallia (M. Estradæ).—This species has nothing gorgeous about it, but at the same time it is one of the prettiest in the whole group. It is a native of New Granada, and was first observed by European collectors in the garden of Dona Estrada, and subsequently it was found by M. Patin when collecting for Mr. B. S. Williams. In general habit it closely resembles M. coccinea, the leaves being 3 in. or 4 in. in length, broadly spatulate, and of a deep green colour. The flowers are, however, quite distinct, solitary, and on slender scapes about one-third longer than the leaves.

Dona Estrada's Masdevallia (M. Estradæ).

The sepals are about ½ in. in length, the upper one being hooded or cucullate, yellowish at the base, the upper half being of a bright reddish-purple, terminated by a slender yellow tail 1½ in. in length. The lower sepals are equal to the upper one in size, but their margins are cucullate and the basal half is purple, their apices being pure white, and these are also terminated by yellow tails corresponding in length with those of the upper segment. The plant from which the figure in the "Botanical Magazine" was drawn flowered in the collection of Mr. H. E. Cauty, of Liverpool, and bore fourteen flowers, the total number of leaves being fifty-five. Our illustration represents the natural size of the flowers, and a reduced view of the entire plant. It well deserves a place in every good collection, being neat in habit, vigorous in constitution, and a most profuse bloomer.—"Botanical Magazine," t. 6171.

The Slender-striped Masdevallia (M. amabilis).—This is a free-flowering species from the high table-lands of Peru, and belongs to the solitary-flowered type. The thick, glossy, great leaves are from

The Slender-striped Masdevallia (M. amabilis).

3 in. to 4 in. in length, of a pure lance shape, narrowed into the petiole below, each being about 1½ in. in width where broadest. The flowers are borne at the apices of slender, nodding scapes, 10 in. or 12 in. in height, and although not so large as those of M. Harryana or M. Veitchi, are nevertheless very pretty and distinct. The flowers are about 1½ in. from tip to tip of the slender tail-like sepals, the colour

being a deep crimson-purple with a yellowish throat, the tube behind being also yellow, streaked with crimson. There are two or three forms of this plant that figured in the "Illustration Horticole," pl. 196, under the name of M. amabilis lineata, being one of the largest and brightest. Although not so striking in appearance as the larger-flowered and brighter-coloured species, it is very floriferous, and well deserves a place in the most select collection. Our figure represents a large-flowered form of natural size, together with a reduced engraving of the habit of the plant.—M. amabilis, "Bonplandia," II., p. 116; M. amabilis var. lineata, "L'Illustration Horticole," 1875, pl. 196.

Spectral Masdevallia (M. Chimæra).—Another New Granadian plant found in deep valleys, sometimes in shady situations, and rarely exposed to the full glare of sunshine. It was discovered by M. Roezl, and was imported by M. Linden in 1872. A little confusion has been caused by another species, M. nycterina, having been mistaken for it by some growers. It has been described by Professor Reichenbach, who could find for it no better name than that of the mythical monster Chimæra, than which we are told no stranger "bogie ever came out of the earth's inside." Our engraving shows the form and local colour of the flower, and the long blood-stained tails and lurid crimson markings on a yellow hairy ground, added to the spectral, indeed almost ghastly effect produced by the snowy-white lip as contrasted with the darker markings, and the threatening aspect of the curved scape and flower, which Dr. Hooker says are "like

The Spectral Masdevallia (M. Chimæra).

the head and body of a viper about to strike," certainly render this plant one of the most curious, not only of Masdevallias, but also of all other Orchids. Professor Reichenbach, in describing this plant on its introduction, draws attention to the fact that it has a slipper-shaped lip in lieu of a tongue. "I have," he writes, "a sketch prepared by the lucky discoverer. It shows the leaf cuneate, oblong, acute, 1 ft. long. The flower-stalks are represented with five flowers; the colours are described as yellow with black hairs; the lip golden yellow. It has a widely-opened flower with long tails, the fimbriate, oblong sepals covered internally with stiff hairs. The petals are slit at their apex into four wings, containing in their centre a great warted body." The plant scarcely comes up to this description, however, since in this country its scapes are one-flowered, and the lip is pure white instead of golden yellow; indeed M. Roezl says the original type of this species, as described by Prof. Reichenbach, has never reached Europe alive. I first made the acquaintance of this singular plant in 1873, when M. Lucian Linden kindly allowed me to make a sketch of a dried flower, and this subsequently appeared in the "Florist," 1873, p. 3; "Botanical Magazine," t. 6152; "Gardeners' Chronicle," 1872, p. 463; 1875, p. 41 (with woodcut figure); "Revue Horticole," t. 117–118.

Bat-like Masdevallia (M. nycterina).—This is one of the most curious of all the species, and so closely resembles M. Chimæra, that it was supposed to be that species when it first flowered in Europe. The sepals and petals are triangular, of a pale yellow colour heavily blotched with dark purplish-brown, and densely papillose, especially towards the edges of the segments in front, their ends being prolonged into thin purple tails 3 in. or more in length. It is not showy, and will only be grown by lovers of the curious.

Elephantine Masdevallia (M. elephanticeps).—This is a large-flowered species extremely rare in cultivation, if, indeed, the true plant exist at all in our gardens, other species having been repeatedly introduced under this name. It appears to belong to the M. civilis and M. coriacea section of the genus, the species belonging to which

The Elephantine Masdevallia (M. elephanticeps).

are characterised by their thick, wax-like, greenish flowers being suffused or blotched with dingy brown, purple, or red, by their papillose lips and fœtid odour. Reichenbach gives two figures of this species in his "Xenia," and represents the flowers as greenish behind at the base, the sepals being blotched with brown or crimson, and the tails yellow within and brown or purple outside. Our illustration gives some idea of the habit of this plant, which, however, is not so beautiful as many of the other more common and lower-priced species.—Reichenbach's "Xenia Orchidaceæ," plates 3 and 74.

Humming-bird Masdevallia (M. Ephippium).—This is a singular species, also a native of New Granada, and, according to Professor Reichenbach, it was first discovered at Loxa by the late Dr. Krause, who sent it to Messrs. Backhouse, and it has since been imported from the neighbourhood of Antioquia and Medellin by Mr. Gustave Wallis and other collectors. This plant is known in Continental nurseries as M. trochilus or M. Colibri, trivial names given

Humming-bird Masdevallia (M. ephippium).

to the plant on account of the flower-bud and its adpressed tails having some fancied resemblance to a humming bird or Colibri. The plant grows from 10 in. to 12 in. in height, the leaves being from 6 in. to 8 in. in length, broadly lance-shaped or oblong, and conspicuously three-nerved behind. The flowers are solitary, on triangular or triquetrous scapes, a little longer than the leaves; the shape of the flowers is peculiar, the two lower sepals being united along their lower margins so as to form a bowl-shaped body about 1 in. in diameter, this being terminated by two slender, yellowish tails, fully

4 in. in length; the upper sepal is much smaller than the lower ones' and after forming a hood over the column and petals it suddenly contracts into a slender yellow tail, 4 in. long, which bends back at right angles; the petals are thick and fleshy, and curiously three-toothed at their apices. The colour of the flower varies considerably, as also do the published portraits of this highly curious plant. I saw the plant flowering in Mr. Bockett's collection in 1874, and the plant has since flowered with Mr. J. T. Barber, of Spondon, near Derby, both varieties being different. According to the description sent to M. Linden by his collector in New Granada, this plant was to have brownish flowers shot with metallic blue, and the plate in "L'Illustration Horticole" shows some blue lights. Three lots of this species were sold at Stevens' rooms in the spring of 1873 for £32, and it is thus described in the catalogue:—"M. trochilus (Colibri humming bird), the King of the Masdevallias, and the largest-flowered species with long tails, in the way of Cypripedium caudatum; red-brown colour with blue reflex, very rare." Mr. Barber's flowers were of an unattractive rusty brown colour, the tails being yellowish. There may possibly be superior varieties, but the plant as at present known is worth growing as a curiosity only. Our illustration represents the plant reduced about one-fifth.

Synonyms—M. Ephippium, Rchb., fil. in Bot. Zeit., 1873, p. 390; Xenia Orch., vol. ii., p. 213, t. 195; Gard. Chron., 1874, p. 372; Bot. Mag., 6208. M. trochilus, Linden et André, L'Ill. Hort. (not Rev. Hort. as cited in Bot. Mag.), t. 180. M. Colibri, Hort. Linden.

Purple-spotted Masdevallia (M. Melanopus).—This is not a showy species, but is, nevertheless, very pretty and variable, and

Purple-spotted Masdevallia (M. Melanopus).

well deserves a place in select collections. The whole plant rarely exceeds 6 in. in height, having glossy, spatulate leaves, and zigzag spikes of from three to five whitish or yellowish-purple-dotted flowers. Mr. Green, of Holmsdale Road, Reigate, has exhibited three distinct forms of this pretty little plant at South Kensington, and one of these had pure white flowers with yellowish tails and conspicuous spots of purple, another had smaller and more profuse spots, and a third was altogether yellowish with greenish tails. The white forms are most attractive. This species has been confounded in some gardens with M. polysticta; but they are quite distinct, and for all practical purposes the more robust habit, purplish-tinted flowers, and hairy sepals serve to distinguish M. polysticta from our present plant.

The Dotted Masdevallia (M. polysticta).—A free-growing and exceedingly floriferous plant, bearing from two to five flowers on a slender scape 10 in. or 12 in. in height. The leaves are 5 in. or 6 in. in length, oblong, spatulate, and of a bright green colour, rather thick and fleshy withal. The flowers are of a dead or greyish-white colour, dotted profusely with reddish-purple, the upper sepal being hooded or cucullate, and agreeing with the lower oblong sepals in being abruptly narrowed into slender, yellowish tails. Our figure represents the general part of this pretty little species. It is a native of the high and comparatively cold plateaus or table lands of northern Peru, where it was discovered in 1873 by that veteran traveller and collector, M. Roezl, who describes it as forming strong tufts on the Cordilleras, where, as in our collections, it is very robust and floriferous. In his description of this species Professor Reichenbach remarks that it reminds one of Odontoglossum nævium. There are several forms in cultivation, some having larger and darker markings on a pure white ground, while others are French white suffused with pink, and densely dotted; but all are pretty, although by no means bright or showy. Its winter-blooming habit is an additional recommendation. I have seen this species flowering very freely in Messrs. Veitch's Masdevallia-house at Chelsea, along with the snowy-white M. tovarensis, M. ignea, and others, producing altogether a very pretty effect.—"Gardeners' Chronicle," 1874, pp. i. 338 and ii. 290; "L'Illustration Horticole," 1875, pl. 199; "Gartenflora," t. 869.

The Gaping Purple Masdevallia (M. infracta).—This is a very floriferous, purple-flowered species from Brazil, whence it has been largely imported. Although not showy, it well deserves a place in collections, as it continues growing and flowering nearly all the year. I first saw it in Mr. Wilson's collection at Lee Hall, near Liverpool. It appears to be synonymous with the M. longi caudata of M. Lemaire ("Illustration Horticole," 1868, p. 109), and appears to have been introduced to Continental gardens as early as 1828. The entire plant rarely exceeds 6 in. in height, the leathery, spatulate leaves being gracefully arched and tridentate at the apex. The flowers are solitary, on slender, triquetrous scapes, rather longer than the leaves, and are of a glistening purple colour, dotted with purplish-brown.—Lindl. "Genera and Species," p. 193; "Gardeners' Chronicle," 1871, p. 1422; "Belgique Horticole," 2873, pl. xxii.

MY DIARY FOR SEVEN YEARS.

By W. DENNING.

Sept. 4.—*Sowing*—700 pots of Fulmer Beans, and placing them in first Strawberry-house; also Radishes; and twenty-four pots of Lobelia. *Potting*—Cattleya labiata in fibrous peat and sand; potting off and plunging in bottom-heat Neapolitan Violets; shifting the few remaining spring-struck scented-leaved Pelargoniums into 6-inch pots; potting up cuttings of double Wallflower; potting off Hollyhocks; also 600 Brompton Stocks for planting in spring; and young Callas; shifting Primulas into their flowering pots; putting Sophronites grandiflora in baskets, in peat, in the Lycaste-house; putting Cattleya El Dorado on to block and placing them in the East Indian-house; shifting Dr. Lindley Pelargoniums from 60-sized to 48-sized pots; putting Japan Lilies under glass, ought to be kept under cover after July; shifting old double Wallflowers; fresh mossing all Orchids requiring it; shifting some seedling Cinerarias into their flowering pots. *Cuttings*—Put in of Gazanias an extra number; also of Alyssum, Oxalis, Centaurea, Petunia, Tropæolum, and Agathæa. *Planting*—Endive beneath hedges; also more July-sown Coleworts; getting off all Strawberry runners in pots, and placing them ready for planting. *Miscellaneous*—Putting wired stakes to tree Mignonette, and tying it to them; tying Chrysanthemums; washing Orange trees for scale; giving Celery a good watering; and watering Peach trees in early and late houses; gathering Mère de Ménage, English Codlin, Cox's Orange, Alexander, and Keswick Apples; and Williams' Bon Chrétien Pears; also Peaches out-of-doors daily; digging land for Cabbage Lettuce; making up Endive and Lettuce beds; beginning to stub up useless fruit trees, and prepare ground for others; turning Mushroom manure nearly every day; placing ashes as a medium for holding moisture in Phalænopsis house; going over trees again in order to remove breastwood; thinning latest Turnips; hoeing and thinning winter Spinach; weeding and rolling walks; clearing hedge-sides; taking wasps' nests; removing top-light from early Vinery and Peach-houses; keeping Fig-house about from 60° to 65° by fire-heat for late crop.

Sept. 5.—*Potting*—Off autumn-struck Coleus, Pelargoniums, and latest-sown Cinerarias. *Planting*—Some young Cucumbers in large pots; beginning to plant Strawberry runners. *Miscellaneous*—Tying up Endive to blanch, also October Mignonette and Fig trees loosely; washing Camellias; gathering Thorle Pippin Apples; cutting Lavender; pulling up Marjoram for drying, also spring-sown Onions; getting land dug for August-sown Lettuce; stopping growing shoots on Vines; keeping temperatures in Orchid-houses as follows, viz.:—Phalænopsis-house to 72° at night, allowing it to rise from 5° to 8° higher by fire-heat in the daytime; East India house, 70° at night, 85° in the daytime; Dendrobium-house, 65° at night and 80° in the daytime; Cattleya-house, 65° at night and 80° in the daytime; Lycaste-house same as Cattleya-house, and unless it gets below 60° at night no fire-heat need be used; Odontoglossum-house 60°; no fire-heat, unless below 55°; moisture should be much less than what it was a month ago.

Sept. 6.—Arranging conservatory, and introducing to it Celosias, Maize, late Fuchsias, Pelargoniums, Coleus Verschaffelti and Duchess of Edinburgh, Cannas, Caladiums, Centaureas, Wigandias, and Palms. *Cuttings*—Put in of Heliotrope, an extra number

also of Verbenas and Antennaria tomentosa; pricking out young Pinks. *Miscellaneous*—Staking and tying various hard-wooded plants; syringing Dendrobiums again for thrips, taking the plants out-of-doors before doing so; spawning Mushroom bed and soiling it; manuring Pea land for Strawberry plantation; giving Vanda cœrulea a little more moisture now their spikes are 9 in. long; giving Lycaste Skinneri more water as the bulbs are just forming; pruning old Apple trees.

Sept. 7.—*Sowing*—300 pots of Mignonette, also Radishes, and Mustard and Cress regularly. *Potting*—First winter Cucumber plants, using 6-in. pots; putting Heliotrope cuttings into cold frame; shifting Gesneras into their flowering-pots; shaking out Pelargoniums and re-potting them in smaller pots; shifting the latest-sown Balsams, also the latest-struck Fuchsias, and latest-sown Primulas into their flowering-pots; putting in some Hydrangea cuttings. *Planting*—Some All-the-year-round Lettuce, and planting last-sown Cucumbers in pit. *Miscellaneous*—Washing Saccolabiums and Gardenias with soap-suds for scale; gathering orchard Apples; also some Beurré Benoît and autumn Bergamot Pears; a few Lord Palmerston Peaches and Victoria Plums; autumn Giant Cauliflower now fit for use; budding the last of the Briers; earthing up a fourth half-row of Celery fully at one operation; clearing up bulb ground ready for plunging fresh supply; top-dressing Roses with horse manure and loam.

Sept. 8.—*Sowing*—A little more Spinach, which often comes in very useful in spring. *Potting*—Layered Anne Boleyn Pinks. Shifting hardy Rhododendrons into larger pots. Putting Salvia and Ageratum cuttings out-of-doors; putting Daturas where they could receive full sun to ripen their wood. *Planting*—Violets in frame. *Miscellaneous*—Syringing out-door Peaches every evening to keep down spider. Gathering Kerry Pippin, Manks Codlin, and Golden Pippin Apples; also ten dozen Apricots; sending in Magnum Bonum Plums for preserving. Salting terrace walks to keep down weeds.

Sept. 9.—*Sowing*—Seeds of Centaureas and of Radishes to come in in October. *Potting*—200 young Czar Violets, and putting Calceolarias into pit; also potting layered Carnations; shifting some Ghent Azaleas into larger pots; putting half the orchard-house trees out of doors; inserting cuttings of Coleus and of variegated Sedum. *Planting*—Three beds each of first-sown Tennis Ball and Bath Cos Lettuce, also Sweet Williams. *Miscellaneous*—Tying up straggling shoots of Irish Yews, staking Mignonette, bunching up Basil and placing it in a cool airy place to dry; netting Coe's Golden Drop Plums; giving Mushroom bed a gentle watering, Lettuce also watering; gathering Beurré d'Amanlis Pears; distilling Mint water; exposing Tomatoes to direct sunlight; making some beds ready for Winter Lettuce by spreading manure on undug ground, and throwing soil from the alleys over it, an experiment which answered well; stopping Tomatoes; top-dressing some one-year-old double Primulas; leaving lights altogether off first-struck cuttings.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Late-sown Primulas intended for flowering in spring should now be shifted into their blooming pots, which should be 6 in. ones; pots of this size, with the aid of manure water, will be found large enough for most kinds of fast-growing, soft-wooded plants. Primulas like a compost consisting of good fresh loam with one-sixth leaf-mould and a little sand. An idea is prevalent that they are liable to damp off if the collar of the plant in potting be not kept well up above the soil. Why such an impression should exist it is difficult to surmise, unless it arises from the fact that Primulas are more than most plants subject to damp off at the stem, especially during winter, if kept in too low a temperature with correspondingly too much water; I say correspondingly, for if Primulas be grown through the winter in a night temperature of 50° or 55°, they will bear almost as much water as Cinerarias without suffering in the least from damp, showing clearly that it is the low temperature which they dislike; but when kept warm in this way they must be close to the light, or the growth will be drawn up weakly. Press the soil firmly in the pots, letting it come well up to the base of the under leaves so as to keep the plants secure in their places without rocking about, as they do when not potted low enough. Let both these and the earlier-sown plants intended to flower through the last months of the year and early portion of the next be for some weeks yet in cold frames exposed to plenty of air, elevated close up to the glass, with the lights off in fine weather, particularly at night, as exposure to the dew is of considerable service to them. A piece of very thin, open netting stretched over the frames during the daytime, when the sun is on them, will be much better than exposing them to its full influence.

Cinerarias.—Attend well to those that were sown earliest, as their pots will now be getting filled with roots, in which case any deficiency in the way of water will so far injure them as to cause the loss of their lower leaves and when that happens, however well flowered they may be, they lose half their beauty. Let the plants be looked over every ten days in order to see that aphides do not get a lodgment on them, or a like loss of leaf will be the result. If the plants be fumigated to destroy aphides, it should be done lightly, or the foliage will be liable to get injured. The safest course is to watch closely, and immediately a plant is affected with either aphides or thrips to dip it in Tobacco water, a supply of which ready for use should always be at hand in every garden, large or small, especially during spring and summer, when these insects come to life so quickly.

Fuchsias that have been flowering since the spring will, despite the best attention, now be getting exhausted and shabby. They may be turned out under the protection of a wall for a few weeks to ripen up and dry off, giving them only as much water as will prevent the leaves from falling too quickly. Spring-struck plants grown for later flowering will keep on for some time longer if supplied altogether with very weak liquid manure. This is better for Fuchsias than applying it stronger alternately with clear water. As fast as the flowers decay pick off the seed-pods before these have time to grow, as their production taxes the plants to a greater extent than the blooming does. Syringe them well overhead once or twice a-week. Even yet, if the weather be warm, they will be liable to red spider.

Late-struck Double Petunias will, if they have been well attended to, have been found very useful for either greenhouse or room decoration: cuttings of these should now be put in for flowering next spring and summer, after which the old plants when done blooming may be thrown away, as young ones are in all respects better, and occupy less room.

Ferns.—In places where Ferns are grown, if the plants stand on any loose material that will hold moisture, such as ashes or sand and fine gravel mixed, kinds like Pteris serrulata, and the varieties of Adiantum, such as A. cuneatum, formosum, and pubescens, will drop their spores and vegetate in quantity without the trouble of a special preparation in sowing them. The young plants that thus come up in spring will now be large enough for putting singly in small pots; for these do not use them too large, but in all cases let them be proportionate in size to the plants. Peat is the most suitable soil in which to grow them when it can be had good, but where not easily procurable amateurs need not fear growing these and other Ferns in ordinary loam, always taking the precaution of keeping it porous by a liberal admixture of crocks broken to the size of Horse Beans; or coal cinders will do equally well broken small, to which some sand has been added; the proportion of this latter, for these, as for all other plants, cannot be exactly determined, being dependent upon the quantity of sand the soil naturally contains. I am led to make these remarks by so often seeing amateurs fall into the opposite extremes of mixing too little or too much sand with their potting material, the result of which is either the whole mass in the pots gets sour and unsuitable for healthy development of the roots in the former case, or not affording sufficient sustenance through being too open and poor. Ferns, unlike many plants, should, as soon as potted, be immediately watered, for if ever the soil be allowed to get so dry after potting as is needful for subjects that do not require so much water, they will flag, and whenever this occurs to a Fern, especially when its roots have been disturbed, as in the case of potting, it receives serious injury, and generally loses many of the fronds. The cultivation of Ferns is so often associated with the idea of a dark, heavily-shaded situation, that amateurs do not give them enough light. This produces a disposition of the fronds to damp off in the winter, especially if the growth has been made in too close and warm an atmosphere. Ferns so treated generally make very large, deep green fronds, but not enduring; the varieties above named, which are so useful for general purposes, can scarcely be grown with too much light, provided they are shaded slightly from the direct rays of the sun when it is powerful. Older plants of Ferns, such as the above, grown for cutting should be kept in comparatively small pots; by this means any disposition to luxuriant growth is checked, and they will stand in water for several days.

Agapanthus umbellatus.—This, though old-fashioned, is an excellent plant for amateurs to grow; by some, however, it is held in little estimation, simply because it is easily managed. It will succeed in any kind of soil, and will bear neglect through inattention in watering better than most plants; it will also do with less pot-room than many plants. The excellent habit of its curved, drooping leaves, which, when well grown, almost cover the pots in which it is placed, constitute it one of the best for standing about door porches,

on terraces, or by the side of walks, where the large umbels of blue flowers it forms are seen to advantage. They are likewise very useful for cutting, lasting well in that state, and affording a colour not over-plentiful. It is also equally at home in the greenhouse. As soon after this time as the flowering is over, when it is required to be increased, the plants should be turned out of the pots, the roots (which are usually very much interlaced), disentangled, and the crowns divided; if the roots be much matted they can be separated with the least injury by plunging the ball in a vessel of water and working the whole of the soil out with the fingers; a common edging iron will sever the crowns with as little damage to the roots as any implement that can be used. If two or more crowns be retained to each piece divided, they may be put in 8-in. or 9-in. pots. Grow them in ordinary loam, to which add enough sand, and ram the soil firmly in the pots, which should be well drained, as they will do with less shifting than most plants.

Nierembergias are now much neglected. Although small-growing, free-flowering subjects, they are well worth cultivation. Amateurs will find them very suitable to edge vases for summer decoration, where their drooping habit and profusion of flowers are seen to advantage. They are particularly adapted for use in window boxes or for room plants. Cuttings should at once be got in, selecting the softest shoots that have not a disposition to bloom. Put in the points of these 1 in. apart in 5-in. pots in sandy peat surfaced with ⅓ in. of sand; water them immediately, and cover with a bell-glass, putting them in a little warmth. When they are struck they should be placed singly in small pots for the winter, and kept near the glass; if they can be accommodated with a temperature of 45° in the night it will keep them growing.

Kitchen Garden.—Although the different crops have been refreshed by the showers that have fallen recently more or less throughout the country, still they have effected little more than surface-wetting, which is so far deceptive that the lower and more important roots are not much benefited. Everything in the shape of winter vegetables should at once be well watered, or they will not produce more than half the usual weight of crop, with the still further disadvantage of being liable to push into unseasonable growth when copious rains fall later on, which would render them apt to suffer should hard weather ensue.

Greenhouse Plants.

As most of these will now be out-of-doors maturing their growth, any houses needing repairs or painting should now receive that attention, so as to be in readiness to receive the plants, should wet or unfavourable weather set in. If this occur before the houses are fit for their reception, raise the pots from the floor of ashes or other bed on which they may be standing, and place them on a couple of bricks so as to secure perfect drainage, and thus prevent a too great saturation of the soil. Any of the more recently potted kinds, or such as have not well filled their pots with roots, will be in a safer position laid or tilted on their sides during a continuance of heavy rain than they otherwise would be; by excluding the wet from the balls in this way, the plants will be rather benefited than otherwise from the thorough cleansing which the tops will receive. On the other hand, should the weather continue dry, the utmost watchfulness will be needful to see that they do not suffer from want of water, as plants dry much faster when placed out-of-doors with a constant current of dry air circulating amongst the pots than they do when placed on the stage of a greenhouse. To ensure soaking them through, the first watering which they receive should only be preliminary, and as soon as that is soaked in repeat it once or twice if thought necessary, as it cannot do the least harm if no more be administered till the plant is in a fit state to receive it again. It is giving water in small quantities before it is really required that does the mischief, as then the soil becomes water-logged and sour, a condition fatal to all healthy root-action. So long as plants remain out-of-doors, they should be freely syringed on the afternoons of fine days, a proceeding which tends to keep down red spider. Heaths, however, should prove an exception to the general syringing, as it is only a few of the free-growing winter-blooming varieties which derive benefit from it, and even in their case it ought now to be discontinued. Many of these are subject to mildew, and any that show the least symptoms of it, should at once be dusted with dry flowers of sulphur, which will quickly rid them of its presence.

Fuchsias and Pelargoniums.—Vigorous, young, medium-sized plants of Fuchsias are much to be preferred to old ones, and in order to get a supply of these for next season, cuttings should be put in at once. For this purpose select the tops of soft young shoots, as free from flowering or flower-buds as they can be got, and picking off any that may be on them, before putting them in. They will strike freely under bell-glasses or handlights in a shady position, if kept close and moist. Any that have been put in earlier, and which are already rooted, should be potted singly in small pots, using good, rich soil for the purpose. This should consist of good fibry loam, leaf-mould, and well-rotted manure in the proportion of three-fourths of the former to equal parts of the two latter, to which a little sand should be added to keep all free and open. When potted, place them in a cold pit or frame, where they must be kept well syringed and properly shaded till they get a good start; after that they will bear more light, but they must not have sufficient sun to cause them to become hard and woody. Should any be required for very late blooming, select a few of the plants that came in first, and which have since had a rest, and shorten the side shoots by pruning them in a little so as to induce them to break back, which they will soon do if the plants be subjected to a brisk, moist heat. Keep them well syringed to prevent red spider from attacking them, and supply them liberally with weak manure-water whenever they require water at the roots. There are one or two varieties that are almost perpetual bloomers; of these, the best is Mme. Cornellisen, a kind which may be had almost as good in autumn and winter as in summer. Then, again, there is that sterling old evergreen, F. serratifolia, a plant that appears to be but little known or it would certainly be more cultited than it is at present: this variety blooms naturally about the end of October, and lasts several months in great beauty if kept in a temperature of about 45° or 50°. In habit it is more shrubby than any of the others; it therefore succeeds best grown in the form of a bush, a shape that it naturally assumes. The flowers are borne in clusters at the ends of the branches; they are about 3 in. long, and of a bright red colour. It is altogether a valuable plant, on account of its flowering at a dull time of the year, and one that I can strongly recommend for that purpose. Pelargoniums of the zonal kinds that have been in the open air and kept back by having their flowers pinched off, should now be placed under glass, where, if supplied freely with manure-water, they will last in bloom till quite late in the autumn. Those intended for winter blooming should still be kept plunged in a bed of coal-ashes in full sunshine, in order that the growth which they make may be short-jointed and thoroughly matured, in which state when placed in dry heat by-and-by they will flower freely. The show and fancy varieties that were cut down some time back will now be sufficiently forward to shake out and re-pot. To fit them for this purpose they should be allowed to get somewhat drier at the root than usual, as then the soil will leave more readily than it otherwise would do. Pelargoniums are frequently allowed to get too forward in growth before they are re-potted; and when that is the case, the bark of the young shoots gets so contracted from the check received, that the plants rarely start freely again. In the case of young plants very little trimming of the roots will be needful, but for those that have already attained sufficient size, nearly half their length may be cut away. The best soil for Pelargoniums is a good, stiff, fibry loam, moderately enriched with some thoroughly decomposed manure. This should be well beaten up, in order that it may be thoroughly incorporated with the loam. Should the latter contain a moderate amount of gritty matter, as most loamy soils do, little if any sand will be needed, as Pelargoniums require less of that than most plants subjected to pot cultivation. In re-potting see that the compost is only just moist, as then it can be forced into the pots more firmly than wet soil. From 5-in. to 7-in. pots will be sufficiently large for any ordinary-sized Pelargoniums after they have been shaken out, as all that is required is just sufficient room for their roots without being too much crowded together. After potting set the plants in a light house, pit, or frame, which should be kept rather close and shaded for a few days; after that they should be subjected to full sunshine, and should have plenty of air, and a good syringing every afternoon when the weather is bright and clear.

Cinerarias, Calceolarias, Lilies, &c.—Cinerarias, to come in early, should now be pushed on by being shifted into larger pots, using a light, rich soil. The best compost for them is a mixture of good, fibry loam, leaf-mould, and cow-manure, in the proportion of two parts of the former to equal proportions of the two latter, to which should be added some clean, sharp sand. In order to keep the drainage free and open, place over it some of the rougher portions of leaf-soil and coarse pieces of flaky manure, filling up around the ball, but not too tightly with the mixture just named. The plants should then be returned to a shady pit or frame, where they can be set on a cool, moist bottom, and kept syringed once or twice a day according to the state of the weather. This will greatly expedite their growth and keep them free from red spider, to which, at this season of the year, they are subject. Watch closely for green fly and mildew, and fumigate the moment aphides appear, or they will soon disfigure the leaves and stop the growth of the plants. Mildew is easily eradicated

by dusting the parts affected with dry flowers of sulphur, which should not be syringed off the plants for a few days. Herbaceous Calceolarias should now be sufficiently forward to be pricked out in pans or boxes, or potted singly in small pots. A damp, shady frame and a soil similar to that recommended for Cinerarias, but with less manured matter in it at starting, will meet their requirements. Syringe freely overhead, and keep them moderately close for a time, after which more air should be given them. Liliums, such as L. auratum and other early bloomers, should be set out-of-doors in sheltered positions, and should only receive water occasionally, so as just to keep the ball moist, allowing the tops to ripen and gradually die, when they may be cut off and the pots stowed away in any shed or other place where they can be protected from wet. Should rainy weather set in before they are properly ripened off, lay them down on their sides, for if they become saturated now the bulbs will be liable to rot. The Lancifolium section and other late-blooming kinds will now be in full beauty, and should be liberally assisted with plenty of manure-water whenever they require moisture at the root. Tritonias and other bulbous-rooted plants of similar character now flowering should likewise be assisted in the same way. Rochea falcata is just now one of the most brilliant among greenhouse plants, and is certainly deserving of more extended cultivation than it at present receives; its large, fleshy leaves root readily in sandy soil if placed on a shelf in the stove or other warm house, or the plants may be divided and increased in that way. To get them to bloom freely, they should be placed in sunny positions when they have completed their growth.—J. Sheppard.

Orchids.

The nights are now becoming cold, and henceforth care must be taken only to give water to such Orchids as really require it; even the Brazilian varieties of Lælias, &c., many of which are now in full growth, should, notwithstanding that, be but sparingly watered; they make better and sounder growth when kept just moist than when wet; and the roots, which are almost sure to be lost if the plants be allowed to become sodden, will be preserved by being kept rather dry. One of the most important matters in connection with Orchid culture during the autumn months is the regulation of the atmosphere of the houses at night, so that it is just moist enough to keep the plants from shrivelling; if it be too damp, it is apt to condense and fall upon them during the night, at which time the house being closed and the temperature at the lowest ebb, the plants are likely to be greatly injured, more particularly if by any chance the temperature has got a few degrees lower than it should be; in consequence of this the young growths of many autumn-growing Orchids are frequently lost. Some Orchid-houses are more difficult to manage in this respect than others, but if attention be paid to the matter the cultivator can soon ascertain at what time of day the last damping down should be given in order to have only the required amount of moisture in the house during the night. In the intermediate-house the afternoon damping down may in most cases be discontinued; and in the other houses, where it may be necessary, it should be done early in the afternoon, and but little water should be used. All things connected with the heating of the houses should now be in good order, so as to ensure the maintenance of the proper temperature during cold weather, for on this much depends; if the temperature cannot be kept down, it entails the necessity of keeping too much moisture in the house, which excites the plants into growth at an improper period; and if it range too low the necessary amount of moisture cannot be given to those which require it: in either case, therefore, the plants suffer. From the present time there will be but little need of shading, but the blinds had better be left undisturbed a little longer, to be used for an hour or two in the middle of the day, when the sun is very bright; at other times it is better not to lower them, but to regulate the heat by means of the ventilators. Lælias, Cattleyas, Oncidiums, Miltonias, &c., should not henceforth be shaded; they want all the sun they can get. Particular attention must be paid to the ventilation (see vol. IX., p. 578), giving air, regulating it, and taking it off according to the weather. The temperatures during September should be East India or warm house, from 75° to 80° during the daytime, and 70° at night; Cattleya or intermediate house, from 70° to 75° during the day, and 65° at night; Odontoglossum or cool house, from 60° to 65° by day, and 55° at night; the higher day temperatures are for sun-heat. There is a warmer and a cooler end in all houses, and as each house will contain plants from various parts and in different stages of growth, they should be arranged according to their requirements. Those who have but one house should treat it as an intermediate house. James O'Brien.

Saccolabium Blumei majus.—I saw the other day at Lord Londesborough's Place at Norbiton, a grand specimen of this handsome Orchid. It was in the best of health, and bore fifteen flower-spikes, some of which measured 18 in. in length.—T. G. A.

GARDEN RECEIPTS.

Apple Maggot.

The Apple Maggot, which is the caterpillar of a small moth known to entomologists as the Carpocampa pomonella, goes by various names in different parts of the country, such as Apple-boring Grub, Codlin Grub, Apple Worm, &c. It is, as every one knows who has grown Apples on a large scale, one of the most baneful insects that attacks this most useful fruit tree. It is difficult to exaggerate the amount of injury caused by the Apple Grub in England, on the Continent of Europe, and in the United States of North America.

The moth itself is a beautiful little creature; but it is very seldom seen in the moth state, and the grower often knows no more than the man in the moon to what cause he is indebted for his basketsful of worm-eaten windfalls in the stillest weather. To find the moth in the daytime, the trunks of the Apple tree should be carefully looked over; or, if the orchard be surrounded with a wooden fence, the moth may often be found sitting against it, with its pretty wings neatly folded round its body, which is three-eighths of an inch in length, the wings being three-quarters of an inch in width when expanded; the head and thorax are brown; the body, where covered by the hind wings, is paler brown, with a silky gloss; the fore wings are grey-brown; they are delicately barred with dark purple transverse lines, and have on the hind margin a large dark blotch, and within this another blotch almost circular, and bordered with scales of a glittering fiery copper-colour. Towards evening the moth begins to move, and may then be seen hovering about the little Apples, which by the time it leaves the chrysalis (the middle of June) are well knit, and consequently fit for the reception of the eggs, which it generally lays in the eye of the Apple, only one in each. This is effected by introducing its ovipositor between the leaves of the calyx, which, closing over the eye, forms a tent that effectually shields the egg from the inclemency of the weather or any other casualty. The act of oviposition is not, however, always confined to the eye. When the Apple stands with the eye uppermost, I believe this is invariably the case; but when it hangs eye downwards, as though regarding the earth, the other end of the Apple is used as a receptacle for the egg, which is then dropped into the cavity surrounding the foot-stalk. As soon as the egg hatches, the little grub gnaws a hole in the rind of the Apple, and buries itself in the substance; and it is worthy of remark that the rind, as if to afford every facility to the destroyer, is thinner in the eye than in any other part, and consequently more easily pierced. The grub, controlled by an unvarying instinct, eats into the Apple obliquely towards the centre, thus avoiding the core and pips so essential to the Apple's growth. At first it makes but slow progress, being little larger than a thread, but after a fortnight its size and operations have much increased. Up to this period the grub has availed itself of the very restricted gallery it has made in its devouring career, as a channel through which to force its excrement; and this may always be observed in a little brown heap or mass, either concealed by the leaves of the calyx or around the base of the foot-stalk, according as the egg has been laid at the eye end or stalk end of the Apple. But when it has eaten half-way down the Apple, and the position of the hole at the top, if the Apple continues upright or nearly so, is inconvenient for this purpose, another communication with the outer air becomes requisite; and it must be constructed so as to allow the power of gravity to assist in keeping it clear. It is accordingly made directly downwards towards the part of the Apple which is lowest, and thus the trouble of thrusting the pellets upwards through the eye of the Apple is avoided, and a constant admission given to a supply of air without any labour. The hole now made is not, however, sufficiently open for an observer to gain by its means any knowledge of what is going on within; this is only to be obtained by cutting open a number of Apples as they gradually advance towards ripeness. Having completed this work, and having reached the core, the grub turns towards the cheek of the Apple and makes a third gallery, through which it eventually makes its exit, but not at present, for as soon as it has thus made sure of a means of escape it returns towards the centre of the Apple, where it feeds at its leisure. When within a few days of being fully fed

it for the first time enters the core through a round hole gnawed in the hard, horny substance which always separates the pips from the pulp of the fruit, and finds itself in that spacious chamber which Apples always possess in their centre. From this time it eats only the pips, never again tasting the more common pulp which hitherto had satisfied it; now nothing less than the highly-flavoured aromatic kernels will suit its tooth, and on these for a few days it feasts in luxury. Somehow or other the pips of an Apple are connected with its growth, as the heart of an animal with its life; injure the heart, an animal dies; injure the pips, an Apple falls. The maggot now leaves the core, crawls along its lateral gallery, the mouth of which, before nearly closed, it now gnaws into a smooth round hole, which will permit a free passage without hurting its fat, soft, round body; then out it comes, and for the first time finds itself in the open air. It now wanders about on the ground till it finds the stem of an Apple tree; up this it climbs, and hides itself in some little crack in the bark.

The full-grown caterpillar takes some three or four weeks to reach its full size. The body consists of twelve segments besides the head, which is obtusely triangular, shining, and nearly black; the body is dingy white, with the slightest possible tinge of pink, except on the second and thirteenth segments, counting the head as the first segment, the backs of both of which are nearly black. Every segment of the body after the second has eight very small black warts, and these are arranged somewhat in pairs, and each wart emits a slender hair or bristle, the very pale colour of the body, and likewise the black warts, are more observable before the grub has quite attained its full size, after which period the colour of the body is slightly darker, and the warts are less distinct. The fall of the Apple, the exit of the grub, and its wandering to a place of security, usually take place in the night time. When safely ensconced in the bark it remains without stirring for a day or two, as if to rest itself after the uncommon fatigue of a two yards' march; then gnaws away the bark a little, in order to get further out of the way of observation; and having made a smooth chamber big enough for its wants, it spins a beautiful little cocoon, and within this changes to a mahogany-brown chrysalis, having on each segment of the body a transverse double series of minute warts. The length of time that elapses between the spinning of the cocoon and the transformation from a grub to a chrysalis does not seem to be very constant, for grubs may be found unchanged even as late as March. Be this as it may, it is quite certain that the creature, whether changed or unchanged, remains in the cocoon eight or nine months of the year, and always during the winter months. The caterpillar is duly hatched during the spring, first feeding upon the leaves, and afterwards attacking the fruit. In the case of large trees little or nothing can be done. With dwarf bush or pyramid trees they may, with a little attention, be much reduced in numbers by going over the trees in the spring, and destroying the larvæ as soon as they come to life whilst they are confined to a limited space, being first enclosed in large spider-like webs before they make their exit, from which they are easily destroyed, but if once they escape and become dispersed over the tree, little can be done.

Much may be done by plucking the infected fruit. Mr. F. Francis thus describes his efforts in this direction in a recent number of the "Field":—"I tried scraping and searching the bark of the trees for the grub, and dressing with Gishurst, &c. I tried trenching the earth beneath them and exposing it to the hardest frosts, and even removing it and replacing it with fresh." Finding these remedies unavailing, Mr. Francis proceeds to adopt another system. "All trees I can get at," he writes, "I search very carefully, and every Apple which I can find bearing any mark of the grub's handiwork—and it is very easily detected—I carefully pick off and have them burnt or destroyed in some way. The first tree I looked over was a young Wellington, some five or six years old, just coming into bearing; I picked off that tree 196 Apples, or more than four-fifths of the crop, which had been pierced by the grub. I then went to a Nonpareil, a great natural bearer, an older and larger tree; off this I picked 515 Apples one afternoon, and 94 the next morning." In both instances the number of Apples left on these espalier trees was very small indeed; so that these statistics, simple as they appear, will give a good idea of the ravages committed This method is very good as far as it goes if the grub be carefully destroyed, but it does not reach the grubs which had left the fruit before it dropped, and there are, doubtless, many others that escape by making their exit almost immediately after the fruit falls to the ground. The remedy proposed to reach these consists of hay ropes wound round the trunks of the trees, two on each tree, one 2 ft. or 3 ft. higher than the other. This acts as a decoy, affording them retirement and shelter; they make it their hiding-place in which to spin their cocoons. By carefully examining these ropes every few days during the season, large numbers may be secured in the caterpillar and chrysalis state. It is stated that as many as 1000 have been taken in a season in this manner from one tree, and where it has been thoroughly tried along with the first method referred to, good crops have invariably resulted. Pieces of old cloth and various other fabrics have been used in place of the hay ropes with very good results. Complete extermination can hradly be looked for, since with the best of management a few will probably escape; but let the fruit grower do his duty, and with the help of birds and insects which prey upon these and similar creatures, there need be little fear of their depredations becoming formidable.

In America, the land of Apples, where this grub commits greater ravages than in Europe, paper bandages are used made of straw wrapping paper, a sheet of which, folded lengthwise thrice upon itself, gives eight layers between 2 in. and 3 in. wide, sufficient to encircle most trees, fastening with a tack, the papers being piled in a heap when done with, and burned. Rags, which are similar to paper, are also used, though much more expensive, but admitting of scalding to destroy the insects. Another contrivance, known as the lath-trap, is said to do great execution. It is made of strips of old sacking 4 in. wide, and lined on one side with thin laths. These are nailed round the tree and dipped into hot water now and then. They are very efficient, but are, of course, much more expensive than straw bands or paper. Another American authority advocates the turning of sheep and pigs into orchards at the time the young and wormy fruit is dropping. These animals will get at least a part of them. One of the most successful experimenters in this way is Mr. Harris, of Rochester, in the State of New York, who gives some striking proofs of the advantages of the practice. He holds the Codlin Moth in check in one orchard by pasturing it with sheep. Another orchard, forty years old, has always been used as a hog pasture, and the Apples are entirely free from the Codlin Moth. Outside the orchard in which the sheep run is a row of seven trees, which produced last year from two to five barrels of Apples per tree, and being unprotected by animals from the Codlin Moth, all the good Apples from these seven trees were put into one barrel. In his garden, where the animals cannot run, from fifty sorts of dwarf Apples there is scarcely a fair specimen. Professor Riley, the State Entomologist of Missouri, highly recommends a trap invented by Mr. Wier, a large Apple grower of Lacon, Illinois, although he does not extol it as a sure Apple Maggot exterminator. The trap consists of four or more thin pieces of board, 12 in. to 20 in. in length, and 2 in. to 4 in. wide, with a screw through the centre, and kept about ½ in. apart by thin fillets thrust between them. The screw must be long enough to be firmly driven into the trunk of the tree, so as to hold the boards in position. A half circle, 1½ in. to 3 in. in diameter, is cut out of the boards on each side of the screw, to facilitate their separation when fastened together by the silken threads of the worms, and to expose the latter more thoroughly when the trap is opened. The caterpillars having spun their webs between the boards, the quickest and best way of destroying them is to have a large tin pan bent in on one side so as to fit the tree. When you reach the tree drop upon your knees, place the depression in the pan against the trunk, hold it there by pressing your body against it, and you have both hands free to open the trap by twisting the boards on their axis. Many of the pupæ or chrysalids will fall into the pan, and some of the worms. Kill the rest or scrape them into the pan. The trap must be turned clear round, as many will be found between it and the bark. Seeing, however, that the worms will spin their cocoons between the inner board and the tree as freely as between the

boards themselves, it will perhaps be found less tedious and cheaper to detach the traps and kill the worms by wholesale, than to open them on the tree. Another method is to collect the traps by the barrowful, submit them to a killing heat, and replace them; they may be used on the ground as well as on the tree. One of the defects of this trap, which it possesses in common with all other snares or traps for this insect, is that it can never exterminate the Apple Maggot, for many reasons that will suggest themselves to all who have any acquaintance with the insect. Another is, that where one trap only is used it can be attached to but one side of the tree, which plan must be inferior to a trap that encircles the tree.

The tomtits are the natural enemies of the Apple Maggot, which these active birds hunt for with the greatest perseverance during the short winter days. They should therefore be encouraged as much as possible, although they take toll by pecking at a ripe Apple now and then. In orchards bonfires made of weeds, straw, Brambles, and other refuse, may be burnt, the fuel being damped from time to time so as to produce little else than smoke. This operation should take place about the beginning of May, just as the moths are emerging from the chrysalis. Lime, benzol, turpentine, stripping the trees of loose bark, and destroying the chrysalids, have all been recommended, and may be employed in gardens and small orchards; it is, however, the opinion of naturalists and Apple growers that all the remedies that have hitherto been proposed are only partial in their action, and that a perfect panacea for the Apple Maggot still remains to be discovered. Carpocampa pomonella also attacks the Pear tree, but, on the whole, it seems to prefer the Apple.

Apple-tree Mussel Scale.

The Apple-tree Mussel Scale, also called Brown Scale, Turtle Scale, and Tortoise Scale (Aspidotus conchiformis), attacks both the trunks and branches of Apple and Pear trees. It is exceedingly small and of the same colour as the bark to which it is attached, hence it frequently escapes the notice of the casual observer. The Scales are hard, dry, and shining, and are found in large numbers, crowded together even to the extent of lying one over the other. They resemble a minute mussel shell, whence the name. They are slightly curved, transversely wrinkled, roundish at the tail, and attenuated at the head, which is semi-cylindrical, less opaque, and of a rusty colour. They adhere firmly to the bark, having the margins broad beneath and woolly, and when dislodged the place they leave behind is white. Within the shell is found the fat green female occupying part of the cavity towards the tapering extremity, the hinder space being filled up with white oval eggs, numbering fifty or more. Syringing the trees with boiling water or boiling chamber lye, thick brine-wash laid on with a brush, dusting the branches with lime while wet, and painting them with train and linseed oils, have all been tried, but with little apparent effect. Coal-tar naphtha, laid on during the winter, is said to be very effective. Mr. Baines recommends seal oil; every portion of the trees must be thoroughly painted over with the oil, getting into every crevice. This should be done as soon as the leaves are off, for, if done late in the winter, the blossom-buds will suffer. A collection of some fifty trees were dressed with the oil, and it was so far effectual as not to require repeating for a dozen years. The trees were over-vigorous, and the dressing checked their growth to something like what root-pruning would have done. They bore splendidly afterwards. It will at once be seen that a dressing of this description is only possible on trained trees of moderate size; with large orchard trees it would be out of the question, for unless the whole surface of the bark is touched with the oil, the results will only be partial. Pears on walls require unnailing, so as to get thoroughly to the back of the trees, brushing the oil in as for the Apples.

Asparagus Beetle.

Foremost amongst the causes which tend to diminish the yield of Asparagus, we must class the attacks of the Asparagus Beetle (Crioceris asparagi) which abounds more in some seasons than in others, and is sometimes very destructive in one locality and almost unknown in others. The larvæ feed upon the leaves, perforate the buds, and even gnaw the rind of the stems. When the beetle first appears it may be controlled, but if allowed to become established the task is hopeless. Whenever the eggs or the larvæ appear, cut and burn the plants as long as any traces of the insect are visible. The larvæ, beetles, and eggs are generally found from the middle of June to September; its larva state continues only for about ten days, after which it descends into the earth to undergo its changes; and in three weeks the perfect beetle is formed, when it ascends the plants to deposit its eggs. The beetle, after eating into the vegetable, lays its eggs in the tender, juicy portion of the stalk and leaves, and when the larvæ (the produce of the eggs) issue forth, they totally destroy those parts of the plant with which they come in contact. The most efficient plan of dealing with this insect-plague is to collect and "stamp out" the young brood, or better still, the full-grown beetles, before they have laid their eggs. The work of collection must, however, be carefully proceeded with, for with the slightest movement the beetles will fall down and conceal themselves in the earth. After a time they reappear, and, if permitted, will crawl again on to the plant, lay their eggs, and recommence feeding. In his war of extermination with the beetles, the Asparagus-grower has no better friends and allies than small birds. If he be wise he will do all in his power to attract and protect them.

Asparagus Fungus.

The first symptoms of Asparagus Fungus are observable in August. Small dark brown spots, which in a few days attain the length of one-tenth to one-fifth of an inch, appear on the stalks, and gradually assume a much darker shade. These spots are surrounded by the ruptured epidermis of the stalk, and are somewhat inflated. On close examination, vertical layers of small powdery spots are remarked under the epidermis; and it is their great accumulation here and there which causes the latter to burst. On one point, viz., the dangerous character of the disease, there is unfortunately no room for doubt, and the grower has every reason to be careful that it shall not gain ground, or be imported into districts hitherto free from it. Above all things, he must endeavour to prevent the discharge of the spores—the organs of reproduction—and, as soon as any signs of disease show themselves, his best course is to remove the parts attacked and burn them. Another remedy is to cut a trench round the infected plants, so as to stop the progress of the fungus, as, like most others, it radiates from a centre. It might be that quicklime frequently applied would avert its progress, if not destroy it, few fungi resisting its caustic effects. C. W. Quin.

MR. GRIEVE ON HYBRIDS.

The remarks upon hybrids (see p. 67) rather surprised me. With long experience in the production of seedlings of a great variety of plants, raised between both species and varieties, I have never known but one instance, and that uncertain, of sterility in the offspring. Azaleas of the hardy species—calendulacea, pontica, nudiflora, and viscosa—all hybridize, and the results are fertile. So with the Indian species, A. alba, phœnicea, lateritia, &c., and even A. amœna fertilized with the former, of which we have some beautiful varieties with small flowers. Lilium speciosum and L. tigrinum, as also L. auratum, hybridize, and the seedlings are all fertile; Cereus crenatus and speciosissimus the same. Pæonia officinalis fl.-pl., and P. sinensis, as well as P. paradoxica, and even P. Moutan, papaveracea, and sinensis; our American Strawberry (Fragaria virginica) and the Southern species (F. grandiflora), as well as the Chilian (F. chilensis), produce fertile progeny. Perhaps I might name the Hautbois (F. elatior), with which I fertilized other kinds, as the exception I alluded to, because many years ago I raised a large number of plants hybridized with the Hautbois, and none of the seedlings produced fruit; but as I never repeated the experiment, and this subject was not then much thought of, it is somewhat uncertain. Rhododendron catawbiense and arboreum, as also the Sikkim species, fertilized with each other, produce fertile seedlings. This is my own experience, and we well know the results of other cultivators. It may be said by those who follow Mr. Darwin, that this establishes nothing, as the so-called species are only varieties, the test of a true species being the fact that the progeny is sterile. I quite agree with your correspondent that it would be well, if possible, to agree what a hybrid is, but it appears to me that it will be difficult to change the common usage. Hybrid is a convenient and significant

word, and as nearly all the productions are, and probably will be, between species, and between species and their progeny, without end, and as cases of sterility are so rare, it will be well to term all hybrids—denominating only the few remotely connected seedlings, possibly sterile, and very diverse in character as mules.

Boston. C. M. Hovey.

FLOWER GARDENING IN VICTORIA PARK.

This park is now worth a visit, the flower gardening in it being at its best, and taken as a whole, it is not surpassed by that in any of our other London parks. The exceptionally dry season has, however, greatly impaired the beauty of many of the trees and shrubs. as well as the turf surrounding the beds. Hollies, both green and variegated, are very fine here, thriving luxuriantly, though the air is so bad. Being kept in good shape by judicious pruning they add materially to the general effect of the garden, where other evergreens suffer much. The extensive herbaceous and mixed borders which surround the shrubberies are well managed and effective. Indeed, it matters not whatever kind of flowering gardening we are partial to, we have only to visit Victoria Park to gratify our tastes. Amongst flowering plants in the mixed border are judiciously introduced specimens of Solanums, Fever Gum trees, Hemp, Ferdinanda eminens, &c., the whole being backed up with tall-growing Tobacco, Tritomas, Japanese Flax, double-flowered perennial Sunflowers, Larkspurs, &c. Lilies have to all appearance been in fine condition, but their beauty is now over.

Sub-tropical Garden.

Though this style of gardening cannot be carried on in Victoria Park in such an effective manner as at Battersea, in consequence of want of shelter, yet what is attempted is done well. The principal feature, perhaps, in the sub-tropical garden is a bank thrown up from 15 ft. to 20 ft. high, and from 25 ft. to 30 ft. wide at the base, gradually narrowing up to a point at the top. This is over-run with Irish Ivy, and in front of it are heaps of rough brick burrs, lumps of white marble, and other stones, which are clothed with compact green and variegated surface-growing plants, such as Sedums, Saxifrages, Cerastiums, &c. Near the base are introduced dwarf plants of Sempervivums, Echeverias, various kinds of Agaves, Chamæpeuce diacantha, and Cassabonæ. Towards the top larger plants occur, such as Aralias, Amarantus Henderi and salicifolius, Dracæna ferrea, Cannas of different sorts, Aloes, Grevillea robusta, Acacia lophantha, India-rubber and Castor-oil plants. These are surmounted by hardy evergreen shrubs, such as Hollies, Euonymus, Box, &c. Round the bases of the latter plants may be seen Violas, Portulacas, Vincas, Fuchsia Sunray, F. Golden Treasure, and others. This arrangement, which is something like that produced by root or rather rock work, is strikingly effective. This bank is flanked on the west by another, upon which are placed pillars of burrs clothed with Irish Ivy, and among these are plunged large specimens of Agaves green and variegated, Bird's-nest Ferns, Yuccas, Aralias, Palms, and other graceful sub-tropical plants. The bank itself is crowned with evergreen shrubs, amongst which are introduced, with excellent effect, large fan-leaved Palms, such as Latania borbonica and Chamærops humilis. We also noticed several plants of Erythrina Crista-galli flowering freely. Between these two clumps, plunged in the Grass, is a grand specimen of Pandanus utilis. By adopting this irregular style of bedding, it is astonishing the quantity and variety of plants that can be effectively introduced into any particular spot. The sub-tropical garden is moreover enriched by a mixed bed, oval in shape, edged with Echeveria secunda glauca, inside of which are dwarf plants of Coleus, Fuchsia Golden Treasure, Aralias, Centaureas, and Dracænas, planted alternately, the centre being planted with tall plants of Grevillea robusta, Acacia lophantha, Cannas, Ficus elastica, F. indica, variegated Abutilons, Solanum argenteum, Cineraria platanifolia, Japanese Maize, and Mespilus japonica: these, combined in the way just named, form a very attractive bed. Acacia lophantha, averaging from 3 ft. to 4 ft. in height, and well furnished with deep green, feathery foliage down to the base, has a light and elegant appearance in a bed with a narrow band of Fuchsia Golden Treasure. Tobaccos are also very effective, particularly Nicotiana wigandioides, of which we noticed a bed containing from twenty to twenty-five plants, each 8 ft. high, with large, branching flower-spikes profusely laden with light pink blossoms, and foliage 3 ft. in length. This, surrounded by a band of Perilla, and edged with Tussilago Farfara variegata, was extremely effective. Beds of Cannas edged with Chamæpeuce Cassabonæ (Fish-bone Thistle) have a pleasing appearance; this Thistle, which is largely grown here, is also very ornamental when used as an edging to large beds containing variegated-foliaged plants. It grows 6 in. in height, even and regular, and has handsome, deep green, glossy foliage. Another pretty bed consisted of Wigandias, set from 3 ft. to 4 ft. apart in angular positions. Of these some of the leaves measured from 2 ft. to 2½ ft. long, and nearly as much in width; the centre of this bed is carpeted with Tradescantia zebrina surrounded by Chamæpeuce Cassabonæ, and edged with Dactylis glomerata. Several others are planted with dwarf, sturdy plants of Ficus elastica, surrounded by a band of Fuchsia Golden Treasure, the latter a desirable yellow edging plant, and one which can be easily kept in order by means of pinching and pegging. Beds of Castor-oil plants (Ricinus Gibsoni), edged with Tussilago Farfara variegata, are also very attractive. There are likewise other beds of great merit that we cannot describe here; one, however, we may notice, viz., a large bed wholly occupied by dwarf, bushy plants of Yucca recurvata; these appear to be in luxuriant growth. Amarantus salicifolius is also largely grown here, and seldom have we seen it in better condition; it is planted chiefly in round clumps, in which the plants, which are of the richest golden-crimson, measure from 4 ft. to 5 ft. in height. Where this succeeds, as it does here, few plants can equal it in brilliancy.

Flower-beds and Borders.

The principal flower-beds occupy a semi-circular piece of ground near the centre of the park, and notwithstanding the heat and drought to which they have been subjected, they exhibit an amount of dazzling brilliancy seldom seen elsewhere, even in the most favourable seasons. Amongst Verbenas the best are Mrs. Holford, white; Purple King and Ariosta, magenta; Sportsman, rosy-pink; and the brilliant scarlet Nemesis; these are extremely showy and good kinds. Coming to the principal beds, the first two that attract notice are large semi-circular ones planted with Centaurea candidissima and margined with Dell's Crimson Beet, supported by E. secunda glauca on the outer edge; the Centaureas are intermixed with Verbena venosa, the best and hardiest of all Verbenas, and seen to excellent advantage here, peeping above and between the silvery foliage of Centaureas; associated with these are beds of Pelargonium Waltham Seedling (one of the brightest and best of nosegay kinds), edged with Pelargonium Lady Plymouth. Then there are large beds of those grand scarlet bedding Pelargoniums, Lucius, Vesuvius, and Nimrod, all flowering in the greatest profusion. There are two good beds of Pelargoniums of the variegated and tricolor sections, the principal being Queen of Queens, edged with Amarantus melancholicus ruber, kept closely pinched and margined with Lobelia pumila, still one of the best of Lobelias, for compact edgings; other beds consisted of Coleus Verschaffelti, excellent in colour, edged with Pelargonium Queen of Queens, from which the blooms are kept constantly picked, the margin being Pyrethrum Golden Feather. The Tricolor Pelargonium beds consist chiefly of Peter Grieve, intermixed with Viola Blue Perfection, edged with Stellaria graminea aurea, and margined with Alternanthera, a quiet yet effective combination; as a close-growing, yellow edging plant, nothing beats Stellaria graminea aurea, which this season is very bright in colour, and when kept neatly trimmed, as we see it here, it has a neat and pretty appearance. Large beds of Ageratum, edged with a dwarf-growing pale scarlet Tropæolum, raised at Victoria Park, and kept true by means of cuttings, add greatly to the contrast of colour. The principal Pelargoniums grown here this season, are scarlet—Nimrod, Colonel Wright, Vesuvius, Lucius, Waltham Seedling, and Edward Sutton; these are all exceptionally good, and have withstood the hot weather with impunity, particularly the last-named kind, which is especially useful, being dwarf in habit and a free flowerer, producing large trusses of the brightest scarlet.

Amongst variegated Pelargoniums the best are Queen of Queens, Flower of the Day, Flower of Spring. Bronze varieties consist chiefly of Neatness and Mrs. Quilter, which in most cases are planted in beds alternately with blue Viola. Ageratum Countess of Stair is a very desirable dwarf, blue, edging plant, and also a good kind for small beds. It does not grow more than 6 in. in height, has a free-branching habit, and flowers profusely.

Carpet Beds.

This description of gardening is largely practised here in the shape of scrolls, hearts, shields, triangles, and hour-glass shaped beds, their globular ends being planted with dwarf-growing plants to represent pairs of pruning scissors, which they do effectually. These beds are about 20 ft. long, and are raised on the turf 12 in. or 18 in., but their tops are flat, and they are edged all round with Echeveria secunda glauca; then comes a narrow edging of Lobelia pumila; next, Alternanthera amœna spectabilis, which forms a carpet at each end in which is planted Pyrethrum Golden Feather so as to form the scissors, the finger holes and blunt points being denoted by single plants of Echeveria metallica, surrounded by a narrow band of Alternanthera magnifica, altogether an interesting and showy bed. Other very pretty beds are edged with Stellaria, next to which come bands of Lobelia pumila, then a narrow band of Gnaphalium lanatum, the centre being Coleus Verschaffelti Improved. There are numerous long scroll beds 4 ft. wide, filled with Echeveria secunda glauca, the designs being represented by Alternantheras, Mesembryanthemums, Antennaria tomentosa, Sempervivums, and others, all skilfully arranged. Fine clumps of Hollies intermixed with Conifers here and there are surrounded by bands of dwarf Aucubas and Perillas, in front of which are sloping beds 6 ft. or 8 ft. wide, occupied by flowering plants in different designs such as stars, triangles, loops, diamonds, and shields, &c., edged with rows of Lobelia pumila and Echeveria secunda glauca. The principal plants used in such designs are Coleus, Pelargoniums, such as Christine, Vesuvius, Crystal Palace Gem, and Madame Rudersdorff; Lobelias, Iresine, Alternantheras, &c. These clumps being raised on grass banks are seen to advantage between the trees from many parts of the ground. S.

PRUNING FOREST TREES.

Having carefully read an article in The Garden bearing this title (see p. 23), written by Mr. Berry, and another by Mr. Pettigrew, which appeared on page 199, I cannot but think that the latter has misconstrued Mr. Berry's remarks. It appears to me that Mr. Berry is not treating of pruning young hardwood plantations, but confines his observations to "branches of trees that overhang roads, and that require foreshortening." These we may reasonably infer to be large branches which have given some cause for being condemned—by obstructing the traffic or by being an annoyance to passengers. In no way does he refer to trees in young plantations that require their lateral branches cut off and shortened in order to equalise their growth. This in proper season is, of course, most essential. The lateral branches should be sawn off carefully close to the trunk, when the wounds will soon heal, and the bark form over them; this, however, should not be done after the branches have attained the size of more than 2 in. in diameter; otherwise an unsound knot and dead piece of wood will be found in the centre of the tree when it is cut. The bark will no doubt usually close over the wound made, but this will take some years, and before it is closed the mischief will be done; and, in old trees, it frequently happens that the perfect closing over the wound with young wood causes a kind of dry rot. When occasion requires, as of course it sometimes will, to cut off large branches of trees, I quite agree with Mr. Berry that "Live branches should in no cases be cut off close to the stem" (excepting branches of less diameter than 1 in. or 2 in.), but they should be cut off, leaving a sufficient number of shoots or small twigs to secure the rising and flow of sap through the branches thus "foreshortened." My experience proves that the mode of treatment for dead branches is to cut them off close to the stem as soon as discovered; if allowed to remain, when they rot off a hollow wound is left in the stem, inducing further decay. Mr. Pettigrew also makes a rather inappropriate allusion to the application of tar; he could not have supposed that Mr. Berry considered it conducive to the growth of bark, for he distinctly stated his reason for applying it to the wound caused by cutting off the dead branch close to the stem was to "prevent Moss and Fungus growth." Land Agent.

The Dundee Show.—The schedule of the International Horticultural Exhibition which is to be held at Dundee on the 7th, 8th, and 9th of September, is very comprehensive, numbering 206 classes—namely, 64 for fruit, 57 for plants, 36 for cut flowers, 10 for table decorations, &c., and 39 for vegetables. The prizes offered amount to upwards of £1000, besides gold and silver cups and medals. For twenty sorts of fruit, prizes of £15, £15, and £10 are offered; a gold cup of the value of £20 being given by the Earl of Strathmore to the winner of the first prize. For eight varieties of Grapes a gold medal is added to the first prize of £15, the second prize being £12, and third prize £7. For twelve stove and greenhouse plants, prizes of £20, £15, and £10 are offered, a gold medal being provided for the winner of the first prize; a gold medal is also offered in the class for nine stove and greenhouse plants. Messrs. Dickson & Turnbull give a silver medal to the winner in the class for six greenhouse plants in flower; and Messrs. Robertson & Galloway a similar medal for twelve spikes of Gladioli. Arrangements have been made with the railway companies to carry plants, &c., at a single fare for the double journey; and the Caledonian, North British, Glasgow and South-Western, and Highland Railway Companies have agreed to carry all passengers going to the Exhibition the double journey for a single fare—the tickets to be available from Wednesday, September 6th, to Monday, September 11th, on condition that the railway tickets are stamped at the Show.

☞ **Lilium Wallichianum v. L. neilgherrense.**—In The Garden of last week (p. 228) the question is asked by a correspondent if Lilium Wallichianum noticed in a previous number as being in flower with us at Colchester is identical with L. neilgherrense. We need scarcely say that such is not the case. Lilium neilgherrense is also in flower with us, and a very fine species it is; its flowers are about 9 in. in length, and yellowish in colour. Both species are fully described in our catalogue, and also in Dr. Wallace's "Notes on Lilies." We may add that the true Lilium Catesbæi has also flowered with us; it is a pretty species, and deserves a place in every collection. We have been fortunate in re-introducing it from America. The kind so commonly sold under this name bears no affinity to it whatever.—New Plant and Bulb Company, *Colchester.*

OBITUARY.

M. Pfersdorf.—This well-known and enthusiastic cultivator of succulent plants died at his house in Paris on the 20th July, in his sixtieth year. He was a most successful cultivator of his favourite plants, and collected in his time many of the rarer Cacti, and usually had a singularly rich collection of the grafted curiosities in that way. He it was who raised the little dwarf succulents seen in the London and Paris markets, having a small branch establishment at Kensal New Town. He was a native of Austria, and served in the Imperial gardens when young. Those who knew him will long remember his manly and genial nature and enthusiastic love for plants.

Mr. J. Duncan.—We regret to hear of the death, on the 11th August, of Mr. James Duncan, of Calne, Wilts. Mr. Duncan was born at Aberdeen in 1802, and was brought up to the profession of a gardener. In 1849 he was appointed Director of the Botanic Garden, Mauritius, from which responsible office he retired in 1864. He very greatly improved the gardens under his charge, and sent many good plants to this country and also to the Australian Colonies.

On the 17th ult., at The Gardens, Bedgebury Park, Kent, of apoplexy, Mr. P. N. Don, in his seventieth year. He was the last surviving son of the botanist Don, of Forfar.

NOTES AND QUESTIONS—VARIOUS.

Propagating Xanthoceras sorbifolia.—M. Rivière states that this fine shrub (of which we published a coloured plate in The Garden for the 18th of December, 1875) is with difficulty raised from cuttings, but that it may be rapidly propagated from small portions of the root.

Early Frosts.—On the 25th of August we had several degrees of frost, which destroyed Kidney Beans, blackened the Potato tops, and very much injured the Vegetable Marrows. This frost is six days earlier than any other frost we have on record at this place. About seven years ago we had a severe frost on the 31st of August, which cut down Kidney Beans, Vegetable Marrows, and Dahlias, and also considerably damaged the bedding plants.—P. Read, *Pleasley Vale, near Mansfield, Notts.*

Stoking Boiler Fires.—"Chef" in his remarks on heating hot-houses (see p. 112) is very hard upon stokers. These, like other garden labourers, are pretty much what they are made; if they are wrong they will submit to be put right, *i.e.*, if the instructions be given in a proper manner. Stoking is soon learned by any one, but in places where heating is largely carried out it is well to submit it to the care of some responsible man who will properly attend to his duties.—A. D.

Dutch Case-knife Runner Bean.—In this neighbourhood this is called the Australian Runner, and is more gross than the Scarlet Runner. It bears in clusters, and continues bearing till late in the season.—W. W., *Fawley, Hants.*

No. 251.] SATURDAY, SEPTEMBER 9, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."

A GARDEN RUN WILD.

THE garden of Mr. Webb, of Calcot, near Reading, differs from most others in being almost wholly abandoned to Nature. Planting there was originally, and walls were built; but beyond that the whole is a tangle, the sight of which would probably unhinge the mind of an orderly gardener. Originally a fruit garden and with an extensive plantation of the best kinds of Nuts, there is now an undergrowth of flowers and a scrambling of Roses and purple Clematis, which together make a combination of wild garden and orchard far gone on its way towards the wild wood. But the sternest upholder of proprieties would not object to seeing walls garlanded with Maréchal Niel with stems like ship's ropes. All round the extensive walls these stout and fearful-looking Lianas of the Maréchal lace themselves, frequently forming a picturesque coping along the top of the wall, the golden flowers in many cases drooping over purple Plums. Wherever there is a bare space on the wall the Maréchal is planted and allowed to have his own wild way, which is sometimes through the trees on the wall as well as along the coping, and sometimes into a neighbouring tree, the result being such a display of golden flowers as few gardens could show. These Roses are all on their own roots; they are struck from cuttings, by inserting two-jointed pieces of the medium-sized but young, long, and vigorous stems of the Maréchal in the borders, either fully exposed or under hand-lights. And all these huge wandering Rose climbers are thus raised. Let us note that they are never pruned! The dead wood is cut out, that is all, and the result perfectly justifies Mr. Webb's practice. In all this madness, however, there is a trace of method, as everywhere one notices the Maréchal and not the more ancient Dog Roses, to which, no doubt, the spot by right belongs. Beneath the dense shade of these, high orchard and vigorous Nut trees, Polyanthuses, giant Cowslips, Violets, Christmas Roses, Auriculas, and similar plants abound, there being many hundred yards of margins devoted to Polyanthuses and Violets. Beneath a wall there was a quantity of the Himalayan Primula denticulata quite vigorous and strong in tufts, showing how easily, in a soil of ordinary quality and in a shady position, this pretty plant may be well grown. Crocuses in variety are extensively raised from seed sown when ripe; they bloom the second year. I should say the Maréchal may be seen here and there among the trees quite away from the walls, and apparently doing quite as well. And as if to rival his bosses of gold with sheets of purple, the new Clematises of that colour are allowed to go wild in the same way, and with remarkable success. They are usually planted at the base of a post or over a low, bower-like, covered way, and never pruned. Under these circumstances it is interesting to see them forming masses of interlaced stems like the common Travellers' Joy and covered with blooms—many of them now past. The question of the age to which Apple trees will last in good condition is one that sometimes concerns the orchardist, and I have seen it somewhere in THE GARDEN that after a quarter of a century they begin to decline. There is pretty good evidence here that a very much greater age is attained without the slightest loss of fertility or vigour. A Pomeroy, known to be 102 years old, forms a grand tree 2 ft. in diameter at base of stem, and is now laden with good fruit. It was originally an espalier, and then trained as a bower over the walk; afterwards it spread into a huge standard tree, the lower and greater branches, however, retaining the outline of their old training, so that the tree is now a very striking object as seen from below. Some years ago (eight or nine) a few grafts of Alexander were inserted towards the centre of the tree; they grew with vigour, bear well, and seem to have the effect of infusing new life into the many branches of the old tree. To prevent the Alexander drawing too much on the ancient tree, its branches are slightly cut back. As the tree is in such perfect health now it would probably be better to cut away the Alexander, and see how long this noble specimen would continue healthy and fertile. It looks as vigorous now as any young orchard tree. Those interested in that fine Apple, the Cornish Gillyflower, would be pleased to see very healthy and symmetrical trees of it here. They do not, however, bear many fruit. The only fruit on one old specimen of the same kind was borne on a shoot that had been half broken through last year, and which hung down in a wrecked condition. In this wilderness-orchard seedlings of various fruit trees spring up, and are usually allowed to fruit, when, if they prove good, they are allowed a permanent place. In this way various good kinds have been raised, particularly of Plums. Many fine Apples are grown in this garden, though the trees are not pruned. A specimen of Cox's Orange Pippin from the crop of 1875, with its bright natural colour, but of course much wrinkled, was a curiosity on the 1st of September. Melons are grown in a remarkably successful way, as the records of the Reading shows testify, and the culture is peculiar. They are grown in ordinary frames in the old fashioned manner, but on beds of decaying leaves instead of stable manure. On a bed of these about 3 ft. high, is placed a frame, then some more leaves are trampled into the frame, and on these are put about 3 in. of loam. The Melons root down into the mass of leaves, and from these beds some of the largest and handsomest Melons I have ever seen have been gathered. The plants are now bearing a second crop, but this, of course, is far from being so good as the first. But Mr. Webb's speciality is Nut culture, though, beyond planting and sowing, there is indeed little "culture." One tree is 50 ft. through, but a large plantation of Cob Filberts is so crowded that they can henceforward only grow upwards. Beneath, as I have said, are Violets, or Polyanthuses, or Grass, and the large Nuts bear year by year without attention, pruning, or digging. The crop is shaken off at the proper season, and then gathered from the ground. We have heard of the easy life of the South Sea Islanders, whose wants are so well supplied by the abundant fruit that they have only to eat and amuse themselves, but it is doubtful if they get such a good return as these Astrachan Apples and Blenheims and Ribstons and large Nuts yield in cloudy England. The time saved from the pruning and other attentions usually supposed to be necessary, the owner devotes to the selection and rearing of seedlings, and he is already known as the chief of improvers of our large Cob and Filbert Nuts, having raised, among others, Webb's Prize Cob Filbert, The Emperor Cob, Improved Cosford Cob, Daviana Cob, Eugenie, Princess Royal, Garibaldi, The Duke of Edinburgh, The Shah, Miss Beckwith, Miss Parker, and Lady Yelverton. The Hazel Nut is one of those things

which even many accustomed to the unending variation of other fruits do not regard as capable of similar sporting, so to say; but here it is as varied as need be—Nuts of all shapes and sizes. Many will be pleased to learn that such a precious fruit should be improved in this manner. It is interesting to notice the faith Mr. Webb has in his children—Nuts he thinks good for all the physical ills that afflict humanity—in fact, that the secret of human health lies in a nutshell! There is a pretty old English cottage, gracefully wreathed with Wistaria, in the centre of this quincunx wilderness; near at hand a vase with flowers stands on a pedestal showing a poetical epitaph far from laudatory. Under this forty years ago the present owner buried what wines, beer, &c., were in the cellar with much ceremony, pouring forth the objectionable fluids with anathema and sermon. Whether the agility, youthful vigour, and clear-headedness of the owner, now in his eightieth year, have any connection with this emphatic renunciation of what so many hold dear, I cannot demonstrate; but that the burial took place, and that he who officiated at the ceremony is yet hale and busy raising Cob Nuts and Maréchal Niel Roses, there can be no doubt. He affirms that the Currant bushes died where the wine was poured in! After a time Cabbages succeeded to some extent; now it grows a middling crop of scarlet Pelargoniums, and Mr. Webb hopes it will bear better things in due time. V.

THE LILIES AT HEATHERBANK.

In Mr. Wilson's interesting collection of Lilies at Heatherbank the autumn-flowering kinds are just now in great beauty. Three noble blooms of Lilium neilgherrense are now in full splendour, and would form, as a group, a grand subject for an accomplished flower painter. The full and rich buff tone of the young flowers contrasts delicately and pleasingly with the light cream colour of the more mature blossoms, and the three blooms of different ages now expanded exhibit three distinct tones of these colours. The flowers are larger and the tubes longer than those of L. longiflorum, from which this new Lily is also distinguished by the glowing yellow of the interior of the cup, shading into rich creamy-buff towards the ends of the petals; it appears to be also of more robust habit. The improved varieties of L. lancifolium are also seen to great advantage at Heatherbank. They are now in full bloom, the large new white being exceedingly beautiful and delicate, and the large and splendid variety of the red-spotted one, flushed as it is with crimson close up to the very edges of the petals, make a truly gorgeous show. The Tiger Lilies, both double and single, are likewise in great profusion, and the new large-spotted varieties—some of the plants being nearly 6 ft. high—make a splendid show in the more sunny parts of the garden, while in comparatively shady places they are still in early bud, promising a succession of beauty to the end of September and half through October, if that should prove a fine month. Among the masses of L. auratum in various parts of the grounds, there are some with unusual markings, several of which are sufficiently distinct for separate cultivation with a view to raising new and striking varieties, especially one with the golden yellow central stripe terminating in a finely-shaded patch of ruddy brown. The splendid L. Krameri, exhibiting in different plants various shades of rosy-red flowered well here this summer, and it was from a graceful study of one of the flowers by Mrs. Wilson that the plate which recently appeared in The Garden was taken. There are several other Lilies now in bloom of less conspicuous beauty, but always having the attraction of graceful form, seldom or never absent in the Lily tribes, and tending by contrast of colour and the smaller size of the flowers, to aid the effect of the more showy kinds. It will be seen by this brief enumeration of the Lilies that are making the gardens at Heatherbank beautiful in September, that there is no lack of variety to fill a Lily garden with colour and beauty throughout the autumnal months; and a list might be furnished which would fill such a garden with fully as much floral beauty in summer, and even in spring. Mr. Wilson states, in regard to Lilium Krameri, that the first bulbs were, he believes, received by Dr. Wallace from Japan, but that the plant figured was not from one of them. The writer of the article says, that the bulb bears the long journey to Europe badly, which certainly seemed the case with the early imported ones, but last year a quantity imported in small tin canisters arrived in perfect order. The varieties differ much in colour, and to some extent in shape: the pure white form, of which Mr. Wilson bought a two-flowered specimen, which was noticed in The Garden (see p. 97), had very much the L. auratum form. Mr. Wilson had one flower of a very much deeper mauve-purple colour than the flower figured; this variety is represented in some Japanese drawings, but it almost requires to be seen to be believed; the largest number of flowers on a stem on any of his plants was six. Mr. Wilson is much disposed to agree with Mr. Moore, that the variety we know as L. Krameri will prove to be a hybrid between L. auratum (probably L. auratum rubro-vittatum) and L. japonicum. L. Krameri has flowered very well in the borders at Heatherbank, and it is probably quite hardy. Mr. Wilson has lately purchased a very interesting folding-screen of Japanese workmanship, covered with careful paintings of Lilies and other flowers, and birds. As many of the Lilies represented thereon are at present unknown in Europe, they should be looked after, for the drawings are most likely accurate, as an ornithologist recognised all the birds, and pronounced the drawings extremely correct. A Lily in the orchard-house at Heatherbank, now showing two large buds ready to expand, may prove a striking novelty, as the foliage presents a somewhat unusual character from that of the generality of the species. H. N. H.

Propagating India-rubber Plants.—How can I take a cutting from an India-rubber plant? Should I take the top shoot off and strike that, or one of the side branches? What mould should I use? Would a mixture of silver sand and ordinary potting-mould do? Is great heat necessary to make the cuttings strike?—E. H. B. [Cuttings of India-rubber (Ficus elastica) root best in spring. Any light, sandy soil will answer the purpose, and a bottom-heat of from 70° to 80° greatly facilitates the process of rooting. Side branches or tops, 6 in. or 8 in. long, root equally well. Some cut the branches to single eyes, leaving a leaf to each, and these root readily on a gentle bottom-heat in a moist atmosphere. Side branches may also be grafted in heat on thick pieces of the root of the common Fig tree (Ficus carica).]

Dwarf Hyacinths in Sand.—In addition to the various ways of growing Hyacinths, given in your last article on the subject (see p. 229), I daresay you will allow me to mention one which I have adopted for some years past. I get dwarf Hyacinths from Holland, in five different colours; they must be of the sort which "feather"—those growing with an upright stem are not fitted for the purpose. I take five deep dishes—say pie dishes or China dishes—putting about half-an-inch of fine sand at the bottom of the dish, one of the bulbs in the centre, and seven round it; I cover the whole with sand, merely up to the crown, damp it well, and put it in the dark, in the same manner as other bulbs in pots. They must be looked at occasionally, and must be kept damp. When they are found to be about 2 in. above the sand, they should be brought into the light. And, when about 1 in. higher the sand should be taken off the top, and be replaced by fresh, short Moss. They are then in order for blooming, and are an exceedingly pretty ornament for a lady's table. It is essential that the eight bulbs in each dish should be of the same colour; I generally have them of white, pink, dark blue, red, and yellow. I am aware that this is by no means a new way of growing dwarf Hyacinths, but it is one which I have never seen adopted in England. It is very effective if they be carefully treated.—W. B. N.

A Rare Hardy Shrub (Garrya elliptica fœmina).—The female plant of Garrya elliptica is rarely met with in gardens, indeed, it is one of the rarest of all hardy shrubs. It has, however, existed in Mr. Finnell's garden at Clevedon, near Bristol, for the last twenty years, and has fruited every season since 1867. The fruits are downy, like young Peaches, about the size of Peas, and are arranged from thirty to forty together on a drooping raceme, 5 or 6 in. in length. This plant is quite as effective as the male kind, which is commonly met with in good gardens, and it well deserves propagation either by layering or seed.—B.

NOTES OF THE WEEK.

Gladiolus Saundersi.—This brilliant plant has for some weeks past been very beautiful in the open border. Some might object to the drooping habit of the flowers, but all who can appreciate variety in plants will like it all the more for this habit. It is at home in the spaces that occur among choice dwarf shrubs or in the mixed border.

Rose-coloured Water Lily.—Mr. Peter Inchbald, of Hovingham Lodge, York, writes to us as follows:—When I was at Christiania this summer I was shown a superb rose-coloured variety of the common Water Lily (Nymphæa alba). It was growing in a small pond in the Botanical gardens, and came in the first instance from a lake in Sweden. What chemical agency originally brought about the change it would be most interesting to learn. Its colour—a deep rose—was not modified in the slightest by its change of habitat. Transmutations of colour from rose to white are not unfrequent, but from white to rose they are assuredly rare.

Ceanothuses as Autumn Bloomers.—These plants, now full of their soft and delicately-coloured, Lilac-like panicles of bloom, are not grown so much as they deserve to be. There are no more beautiful ornaments for sunny walls than these are, and of recent years a number of good kinds have been raised on the Continent, and are no doubt obtainable in our nurseries.

Abelia grandiflora.—Specimens of this most beautiful shrub have been sent to us by Mr. Stewart, gardener to Mrs. Eyre Crabbe, Glen Eyre, Bassett, Southampton. It is like a graceful Fuchsia in habit, the points of the shoots bearing many delicately coloured flowers, tubular, soft lilac, with an orange stained lip and a white margin to the open mouth. It has been growing for eight years on the terrace lawn where it has thriven well.

Imported Horseradish.—Large quantities of Horseradish are now being imported into Covent Garden Market from Holland. It is closely packed in bundles, each containing about twenty-four sticks which are arranged tightly in large casks or buts, each holding 200 or 300 bundles. This kind of produce is now selling at from 3s. to 4s. per bundle, indeed, the price is the same all the year round. Horseradish is one of the most remunerative of all market garden crops; it will grow on any deep, rich soil, and it requires but little labour after planting until the produce is dug for market.

Carpet Flower-gardening.—It may be as well to remind those of our readers who object to the excessively formal beds in which this is usually arranged that there is no reason why the most natural and artistic combinations may not be made of the same materials; the deep green mossy Saxifrages which assume their freshest verdure in autumn would form charming carpets dotted with various subjects from Nertera to autumn Crocuses. So the very dwarf plants now used could be arranged with good effect on the rock gardens or banks. A few bosses of the Nertera on a carpet of Sedum glaucum or any other small plant, for example, would grace a "Rose circle" well. Combinations other than those in vogue would also be better; it may be noticed that the prettiest now visible in London gardens are the simplest and those most free from petty geometrical contortions.

New Pentstemons.—We have just seen some handsome Pentstemons raised by Messrs. Downie & Laird at Pinkhill Nurseries, Corstorphine, near Edinburgh. Their flower-spikes are nearly 18 in. long, and the blossoms individually are finer than those of any Gesneraceous plants we have ever seen grown in plant-stoves. The varieties were named Mrs. Barron (rosy-carmine, with a white throat), Octoroon (bright purple, blotched with maroon), William Millagan (vermilion-scarlet, with a clear white throat), a beautiful variety, and Wm. Fowler (dark purple, with a white throat). Such Pentstemons as these must be ranked amongst the most showy of all autumnal flowers.

New Early Peaches.—The "Country Gentleman" gives some interesting notes as to the Alexander and other early Peaches, which are reputed to be earlier than Hale's and our early varieties. "We get most satisfactory reports of the Alexander this year from California, where it is attracting much attention among fruit growers. Briggs' Red May is the rival Peach there. Mr. Briggs, when he found that he had a very early seedling, kept the matter to himself until he had propagated and planted 7000 trees. Last year he sent a box of Peaches to San Francisco about the last of May. This year he marketed 10,000 boxes. This year a box of Alexanders was sent to a large fruiterer in San Francisco, who had been selling Briggs' Red May, and he acknowledged that the Alexander was ahead of it. Beatrice is quite beaten. A large wholesale fruit firm at Sacramento City who received a box of Alexanders, says that while Alexanders would bring 15 cents per pound, Beatrice would not bring 1 cent. They say they are surprised to see such fine-flavoured, large-sized, and bright-coloured Peaches (as Alexanders they mean, of course,) ripe so early in the season; and pronounce it a very desirable Peach for shipping. The San Francisco men say that it is the finest box of Peaches sent to that market this year, and would pass as No. 1 any time during the Peach season. Messrs. Silva say the Alexanders were large and fine with them this year, and were fully ten days earlier, and twice as large as Beatrice. We also have very favourable reports from parties who have fruited it this year in South Carolina and Georgia."

Early Rose Potato on the Bagshot Sands.—Mr. Noble informs us that this Potato, generally denounced as a failure so far as England is concerned, succeeds so well on the Bagshot sands that it is preferred to all other kinds for the table.

Tritoma Macowani.—This dwarf and brilliant Flame-flower has of late been charmingly in bloom, the colour being intense orange-scarlet and the habit graceful. It is a great gain for the mixed border or for the margins of beds of dwarf shrubs, and for groups and mixed beds in the flower garden. It, like the commoner Flame-flower, does not suffer from rain.

The Grass in the Parks.—The deepening of the lawns in spring is not so sudden a change as that which the past week has witnessed in the London Parks, and in some cases even in the squares, as, for example, in Bedford Square. The much burnt and very rusty lawns have been changed to the loveliest green.

The Early Crawford Peach.—This large and finely-coloured American Peach, as grown by Mr. Miles, of Wycombe Abbey Gardens, on walls, is a superb fruit, well worthy of general culture. We shall be glad to see the new early American Peaches tried in England.

Water Melons in Georgia.—A fruiterer recently closed a contract for 100 Water Melons, each of which was to weigh at least 50 lbs. Those who notice the puny fruit wrongly sold in London streets as Water Melons, may from the above fact get some idea of the size of the true Water Melon: it is not so easy to become acquainted with its fine flavour.

Winter Gardens.—A scheme for the establishment of a winter garden and aquarium, on a site near the centre of Birmingham, is about to be introduced to the public by the promoters. All who love gardens, and know what these so-called winter gardens are—public-houses in disguise—will regret to learn that "promoters" are active in this direction.

Lapageria rosea alba.—Flowers of this are now coming into Covent Garden Market, and more beautiful or valuable white flowers for hair-dressing or bouquet making could scarcely be imagined. They are wax-like and stiff, and last a long time in good condition in a cut state. A plant of this Lapageria in Messrs. Veitch's Nursery is now producing a profusion of lovely white blossoms. This variety flowers quite as freely as the rose-coloured kind.

Trees in London Gardens.—Those who contemplate planting trees and shrubs in small gardens in or near London, would do well to visit the neighbourhood of St. John's Wood, with a view to the selection of the best kinds to plant to withstand excessively dry seasons like the present. While Limes, Chestnuts, Sycamores, and many other deciduous trees have long since assumed a rusty appearance, Acacias appear to enjoy rather than otherwise the excessive heat and drought, and their pale-green foliage, moved by every breeze, is exceedingly graceful and refreshing to look at. The Mountain Ash, though loaded with berries, is already quite leafless. The small white-flowering Clematis Flammula is largely grown in this neighbourhood; its sweet-scented flowers and dark green foliage make it a very desirable wall plant.

Standard Peach Trees at Waltham Cross.—We saw the other day in Mr. Hamerton's garden, at Waltham Cross, the most remarkable Peach tree we have ever seen; it is from 15 ft. to 20 ft. in height, and quite as much through; and at the time of our visit its branches were as thickly studded with ripe fruit as they possibly could be. The fruit is of fair average size; but Mr. Hamerton informed us that it is not so fine this season as in previous years. This tree, which is of the Early York variety, has borne this year no fewer than 1000 good sound Peaches; it has been planted eight years, having been previously grown in a pot. The soil in which it grows is a stiff, yellow loam, well drained. Since being planted, the tree has had no other attention beyond a little thinning once in two or three years. The abundant way in which it fruits is attributed to the wood every autumn becoming well ripened, owing to the tree being out in an open situation, fully exposed to sun and weather. There are younger trees of different varieties of Peaches in the same garden that produce finer fruit than the one just mentioned, but not in such quantities. It would seem, therefore, that walls are not absolutely necessary for the growth of the Peach, even in this country.

MY DIARY FOR SEVEN YEARS.

By W. DENNING.

September 11.—*Sowing*—Second crop of Fulmer Beans in pots; also annuals in 60-sized pots for spring bedding. *Potting*—Cuttings of Centaurea candidissima, and 200 Cauliflower plants for extra early work. *Miscellaneous*—Removing plants of Coleus from cutting frame, and putting them where they can have more air; setting Strawberry plants out singly to ripen their crowns; putting pot Vines (Hamburghs) into an airy situation; shifting late-sown Primulas into 6-in. pots; putting first batch of French Beans into Melon pit, to which a good deal of night air is admitted. *Planting*—Latest-sown Endive; also, some Endive in Asparagus trenches; planting Oxonian and British Queen Strawberry plants behind wall; also Violets in frame, the manure in which must not be too hot, or they will not succeed; removing all nets from trees where not wanted; placing boards over some Endive to blanch it, but this is not so good a plan as tying it; syringing Gardenias well with clear water for bug, afterwards with 5 oz. soft soap to a large potful of water; gathering Magnum Bonum Plums; sending in Apricots and Peaches for preserving; gathering the last Peaches in Peach-case; also the last dish of Gooseberries, and taking off the nets; manuring land for August-sown Cabbages; fumigating Orchids for thrips.

Sept. 12.—*Sowing*—The latest Radishes; weather very wet. *Potting*—Bulbs in loam, manure, and sand; and potting up Pelargoniums. *Miscellaneous*—Tying up Chrysanthemums, and spring-sown tree Mignonette; gathering the last of the Apricots; Peaches out-of-doors ripening fast; sending in Wine-sour Plums; getting frames on Violet beds; digging land ready for Lettuce; getting up six loads of manure for a new Mushroom bed; giving a little guano to Celery, and sloping sides of trenches slightly, to let in more light and air.

Sept. 13.—*Potting*—Hollyhocks and putting them into a pit; Roman Hyacinths (five to a pot) and Roman Narcissi (three to a 48-sized pot). *Planting*—Main plantation of Strawberries. *Miscellaneous*—Gathering Cox's Orange Pippin Apples; all Onions nearly harvested; earthing up latest-planted Cauliflowers; emptying old Mushroom beds. Plants ready for house decoration:—Asters, Mignonette, Sedums, scented-leaved and double-flowered Pelargoniums, Fuchsias, Maize, Zinnias, Scutellarias, scented Verbenas, Heliotropes, Amarantus, Petunias, Balsams, Vallota purpurea, Musk, Rhodanthe, Coleus, Lilium lancifolium, L. auratum, Justicia carnea, Nerine, Agapanthus, Hydrangea, Tuberose, Plumbago, and Primula.

Sept. 14.—*Sowing*—Mustard and Cress, some under cover, and some in boxes in heat; re-sowing Spinach where first sowing had failed. *Potting*—Off Mangles' variegated and Mrs. Pollock Pelargoniums, putting the latter under glass; potting and plunging bulbs in sand. *Cuttings*—Put in of Cerastium in a frame. *Planting*—Some more July-sown Cabbage and some more Endive on Onion ground; likewise span-roofed Cucumber pit. *Miscellaneous*—Taking off runners from Strawberry plants in pots; tying up more Endive, of which there must be a good autumn supply; gathering Williams' Bon Chrétien and some Louise Bonne Pears, and putting all the Kirk's Plums into the fruit room; making new Mushroom bed ready for spawning when cool; pruning Laurels again, being particular not to injure the foliage, also Cotoneasters on walls; shutting up French Bean house so as to retain as much sun-heat as possible; exposing Tomatoes; keeping Orchid houses much drier than hitherto, only keeping Odontoglossums and East Indian Orchids moist now; still giving all Muscat houses fire-heat; Calceolarias, Pelargoniums, Phloxes, and Fuchsias, that were put at the back of a north wall early in June and stopped, and which were about the first week in August put on the south side, and when the flowers began to expand removed under glass, are now in small pots, and in good condition for stands.

Sept. 15.—*Potting*—All outdoor struck variegated Pelargoniums. *Shifting*—Primulas from cold frame behind wall to pits in the sun. Putting last-sown Mignonette in front of Peach-house. *Planting*—Some middle of August-sown Hardy Green Lettuce. Pricking out Cauliflower and green and red Cabbage. *Miscellaneous*—Sponging Camellias. Syringing young Vines with strong soap-water for thrips. Gathering autumn Bergamot Pears and Keswick Codlin Apples; also Plums in orchard, and lifting first field Potatoes. Putting hand-glasses ready in which to prick Cauliflowers. Refilling Cucumber pit for a late crop. Cutting from Cabbage quarter any useless heads, in order to induce the stumps to form sprouts. Pinching off all runners from Strawberry plants in pots, and clearing old Strawberry plantation.

Sept. 16.—*Potting*—Tom Thumb and other green-leaved bedding Pelargoniums; moving Heliotropes in pots under cover. *Planting*—A large piece of August-sown Bath Cos Lettuce, also Cabbage Lettuce, Stanstead Park, Victoria, and Wheeler's Tom Thumb for winter and spring.—*Miscellaneous*—Staking and tying October Mignonette; going over and nailing wall trees; gathering Peaches, Nectarines, Cherries, and Currants, also Apples; Fondante d'Automne and Thompson's Pears, and Capsicums; putting Basil and Marjoram in a box, in a dry place; cleaning Asparagus beds, seed beds, and Celery ridges; getting all frames and cases painted, and putting sulphur on pipes to keep down mildew on young Vines.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Brightly-coloured flowers of the old scarlet Lychnis are still plentiful, and the graceful and vigorous Sorghum halepense is one of the most useful and graceful of autumn-flowering Grasses. Many flowers still exist of Chelone obliqua, and also of Polygonum Brunonis. There are, too, many flowers on the double Pyrethrums. Double and single-flowering Pinks are likewise beautiful, as are also blossoms of the blue Lithospermum prostratum and double Zinnias, the warm season having been favourable both for their growth and flowering. Gladiolus Saundersi is just now producing its last flowers for the season, after having been in blossom for the last two months. Portulacas are very beautiful in Parker's Nursery at Tooting, where Phloxes are also still in perfection. The double Arrowhead (Sagittaria sagittifolia fl. pl.) is the handsomest aquatic now in bloom. Tulbagia violacea, a pretty bulbous plant resembling the more beautiful kinds of Allium, is in flower at the Hale Farm Nurseries, where Verbena montana, Hypoxis villosa, and Agapanthus Maweanus are also in flower. The Colchicums and autumn Crocuses begin now to remind one of their spring-flowering allies, and for some weeks will be among the most charming ornaments of the garden. They may be seen in good bloom at Barr's trial ground; white varieties of Colchicums are also in fine condition at Messrs. E. G. Henderson's, where there is also a good stock of Tritoma Macowani, a new dwarf species, and Romneya Coulteri, and a white variety of Gentiana acaulis. The common double Camomile makes a pretty edging just now. Liatris macrostachya is also in flower at present, at both Henderson's and Parker's.

At Kew many varieties of Asters are in bloom, and there are also many yet to open. The best of these in flower now are A. longifolius, concolor, prenanthoides, carneus, lanceolatus, simplex, and rigidus; the best of all being bessarabicus, the large blue flowers of which are very useful and showy now when other blue-flowering plants are scarce. Saponaria officinalis is still amongst the best of late-flowering plants. Tropæolum peregrinum (the Canary Creeper) is very pretty as a pillar plant. Several varieties of Campanula carpatica are still well in bloom, especially C. carpatica Hendersoni; Platycodon grandiflorum and the Golden Rods are likewise still attractive, and likely to last in beauty for some time to come. Tagetes erecta (both single and double) are blooming freely; as are also various kinds of Scabious and Loasa lateritia. The late varieties of Œnothera are still in good condition after having been in flower more than two months. Medicago elegans is now one of the best creeping plants, growing close to the ground, and being covered with bright yellow Pea-shaped flowers. Clematis campaniflora, C. æthusæfolia, C. cylindrica, and C. Flammula, are very attractive, growing up sticks to form pillars. There are also Eucomis punctata, Diplopappus umbellatus, Galatella hyssopifolia, and G. dracunculoides, Emilia sagittata, and Althæa cannabina, all in flower, the last a very showy and robust plant. Chrysanthemum fruticosum is flowering a second time. Athanasia annua is now one of the most showy among dwarf yellow-flowering plants. Helichrysum bracteatum macranthum has fresh and green foliage, and flowers of various shades of colour, produced in great quantities. Among plants now in flower on the rockery at Kew may be named Zauschneria californica, Erigeron mucronatum, Viola rothomagensis, Rhexia virginica, Arnebia echioides, Oxalis floribunda, and Lychnis Lagascæ.

Prince's Feather as a Hedge Plant.—One of the giant forms of the Amarantus or Prince's Feather is being used this year at Heckfield as a hedge plant, and with good results. It is planted to form a dividing line between the flower borders in the kitchen gardens and vegetable departments, and not only is the hedge perfect as such, but the rich tints of the flowers add greatly to its beauty.—A.

Anagallis Monelli.

African Lily (Agapanthus umbellatus).

Sweet-scented Allium (A. fragrans).

Dwarf Purple Scabious (S. atropurpurea var. nana).

Canary Creeper (Tropæolum peregrinum).

Belladonna Lily (Amaryllis Belladonna).

Common Soapwort (Saponaria officinalis).

Tall Yellow Centaury (Centaurea babylonica).

Italian Starwort (Aster amelloides).

Autumn Pheasant's Eye (Adonis autumnalis).

Willow-leaved Amaranth (Amarantus salicifolia).

Late-flowering Monkshood (Aconitum Anthora).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

FLOWER GARDENING IN BATTERSEA PARK.

This, one of the last formed of our London Parks, possesses permanent features in the shape of well-diversified lawns, water surfaces, shelter, and variety of tree growth that will bear comparison with those of any other of our public gardens, but the chief interest belonging to this park just now is the display of fine-foliaged plants, which, if it be on the whole scarcely so luxuriant as in former seasons, is nevertheless very effective as seen associated with fine undulating breadths of green turf sheltered by trees and shrubs of various kinds. Among the changes which are especially noticeable here, as well as elsewhere, this season in flower garden arrangements, is the growing popularity of all kinds of sub-tropical and coloured-leaved carpet-bedding plants, these being used instead of flowering plants, and not without some good reasons, for, as we have previously observed, carpet-bedding and sub-tropical plants withstand the vicissitudes of our climate better than such fragile flowering subjects as Pelargoniums, Lobelias, and Calceolarias, but to the formal manner in which the carpet plants are arranged exception may be taken. Another advantage in leaf-gardening is, that colours obtainable in that way are richer and softer than those of flowering plants, while the more stately-growing kinds enable us to secure a variety of plant form in our gardens otherwise unobtainable; but there is great danger of our being surfeited by this fashion just as we have been with that of Pelargoniums and Calceolarias. Battersea excels all other London parks in the number of well-grown specimens of hardy fine-foliaged plants which it contains, and among these we especially noted Gunnera scabra, Bambusa gracilis, Polygonum Sieboldi, Ailantus glandulosa, Catalpa syringæfolia aurea, Golden Elder, Tamarisk, Pampas Grass, together with some of the more stately, hardy, herbaceous perennials. Nevertheless, there is yet much to be done in introducing the best of the hardy, herbaceous plants into our flower garden arrangements; nothing, indeed, could well be more effective in sheltered shrubbery borders than Yucca fragilis with its spires of silvery bells; Foxgloves, too, which have been used in Victoria Park, and also in Kensington Gardens with such good results, might also find a place here. What grand effects might also be produced by grouping large masses of Tritoma Uvaria, Pampas Grass, Helianthus orgyalis, H. multiflorus, and scarlet Gladioli! while even the orange and golden-rayed Lilies might be planted here and there in deep, rich, shrubbery borders with advantage, and thus situated their flowers would remain in beauty much longer than in exposed positions. If a small portion of care and expense now devoted to the culture of Pelargoniums and Lobelias were laid out in an intelligent use of hardy herbaceous plants and fine-foliaged shrubs, our public gardens would be more permanently beautiful and interesting than they are at present, when the display is limited to a few weeks' duration in summer, and when we get Alternantheras, Echeverias, and Pelargoniums by the hundred thousand, all arranged in formal patterns. We fail, however, to see why the designs should invariably be formal ones, and not half so beautiful in their relative proportions as the parti-coloured pattern of an old Gothic cathedral window. Bright-leaved, dwarf-growing plants now popular in our gardens are decidedly useful for affording soft and rich masses of colour, but there is not the slightest reason why these colours should invariably be made to resemble gaily-coloured hearth-rugs or gaudy patchwork. Bright colours on well-kept, green lawns are desirable, but it surely must be bad taste to introduce groups of plants into our home landscapes—our living pictures—which a painter of but moderate ability would hesitate to introduce into any of his transcripts of modern garden scenery. In the Royal Academy Exhibition of the past season we had charming pictures of tall Evening Primroses in old-fashioned parterres, and Roses, Clematises, and scrambling Vines, but no one was sufficiently bold or inartistic enough to introduce even a distant glimpse of the now fashionable and aptly-called "carpet" bedding into a single picture. It is to our great public gardens that we must look for improved examples of garden decoration, and if their contents consisted chiefly of plants well arranged that would withstand our climate, that would be all the more desirable, inasmuch as these public examples are seen by thousands annually, and are copied as closely as possible in many private gardens throughout the country. Our London parks may indeed be said to be great schools of gardening, and as such their arrangements and contents should be the best of their kind. Instead of this, in nearly all our London parks the extent of the beds and borders which have annually to be filled with temporary summer-flowering or fine-foliaged plants is so great that much of this style of gardening is badly executed—so bad indeed, that in nearly all our parks this season we could point out particular beds and borders which are so far below mediocrity that they would not be tolerated at all in good private establishments. To remedy this evil, therefore, it is desirable that such space should be devoted to hardy, fine-foliaged shrubs, or to the more stately, hardy flowering plants of temperate climes.

Sub-tropical Department.

Nearly all the large-growing, fine-foliaged plants have this year done moderately well, and this is especially true of the bold belts of glaucous-green, or purplish-leaved, orange, or scarlet-flowered Cannas, and the still more gigantic Castor-oil plants, some of which have formed great lobed leaves nearly 2 ft. in diameter. A bed of these plants on a carpet of white and orange-flowered Lantanas, golden-blotched Abutilon, and the pale blue Plumbago capensis, deserves notice, the whole being margined with the silvery-leaved Gnaphalium lanatum. One of the large beds near the rockwork, to which we particularly alluded last season, is again very pretty this year. A background is formed of the rich purple-flowered Clematis Jackmanni, yellow-canary Creeper, orange-scarlet Eccremocarpus scaber, and purple Convolvulus; then comes a row of the soft golden-leaved Catalpa syringæfolia aurea, and in front a mixed border of purple Petunias, scarlet Pelargoniums, and the dwarf Primrose-flowered Œnothera missouriensis. Another oblong bed of large-leaved Solanums of the S. robustum or S. Warscewiczi type and variegated Maize is also distinct and good; it is margined with scarlet Pelargoniums, silvery-leaved Centaurea ragusina, and a broad band of golden variegated Eunonymus japonicus in front. Tall standard specimens of Acer Negundo variegatum are planted here and there in the shrubberies with good effect, and several belts of Cannas margined in front with scarlet Pelargoniums and golden variegated Gazania splendens, are effective as seen on a carpet of Ivy backed up by shrubs and trees. The feathery-leaved Aralia japonica does remarkably well here, and some masses of the claret-leaved Amarantus (A. ruber), edged with silvery Centaurea, are also effective. Here, as in all the other parks, we notice the almost complete failure of Lobelias and Pelargoniums, and we shall not be at all surprised to see these fugacious materials used next year with greater caution than heretofore. Those who require really hardy, fine-foliaged plants, either for planting in shrubbery borders or for fine effects in the way of foliage, cannot do better than take Catalpa syringæfolia, the common Fig, and some of the plume-leaved species of Rhus or Sumach and Ailantus. There is, however, a little secret in their culture if a luxuriant, large-leaved growth be desired; this can only be properly obtained by cutting them back every spring so as to allow but one or two strong shoots to develop themselves instead of a dozen. Another strikingly beautiful plant used here is the feathery Tamarisk, which shows to excellent advantage, both on rockwork and in shrubberies. Cotoneasters and Jasmines are also useful for covering overhanging rocks, which they do here effectually, and the little rocky waterfall is fringed in a very tasteful manner with blue Shore Grass (Elymus arenarius) and Osmunda regalis, Cyperus alternifolius and its ally C. laxus being used for plunging in the water, and with good results. Another excellent feature here is the use which is made of the common Grape Vine in connection with jutting rockwork and stiff-leaved Yuccas. Battersea Park has the advantage of extensive and varied water margins, but of these we think sufficient advantage has not been taken, for surely they might be utilised so as to give us glimpses of the luxuriant water vegetation of the temperate parts of the globe. What noble masses of tall Reeds, Arundo Donax, hardy Bamboos, or Arundinaria and Irids might we not have here! This is a comparatively unworked field in garden ornament, and nowhere could the idea be better carried out than at Battersea, with its well-sheltered water margins. Palms and other stately-foliaged plants are plunged in the nooks and other sheltered parts of the lawn, and with excellent effect; and among the plants best suited for this purpose we noted Cycas revoluta, Seaforthia elegans, Chamærops humilis, C. Fortunei, Dasylirion acrotrichum, Agave americana and its variegated varieties, while tall examples of Theophrasta imperialis look well plunged in the shrubbery borders. The hardy Aralias, such as A. Sieboldi and A. japonica, are effectively used in this park, as are also the noble-leaved Musa Ensete and its ally M. superba.

The Mixed Alpine Garden.

This is not particularly effective this season. The mounds are as usual covered with the silvery-leaved dwarf-growing Antennaria tomentosa, the foreground being occupied by groups of Agaves, Aloes, Yuccas, Palms, Sempervivums, Echeverias, and other large growing succulents planted on a carpet of Stonecrop, Turfing Daisy (Pyrethrum Tchihatchewii) Convolvulus mauritanicus, and Mesembryanthemums, its chief charm being the infinite variety afforded here by grouping a large number of different species together. This style of decorative gardening may be resorted to with advantage in sheltered nooks, where bright colours are not required; while almost any kind of fine-foliaged plants may be introduced. Some mixed beds of Dracæna terminalis, Yuccas, and other dwarf succulents, on a carpet of white and lilac-flowered Nemophila, edged with Golden

Mesembryanthemums, are very tasteful, as is also an oblong group of purple and glaucous-foliaged varieties of Ricinus, on a carpet of soft green-leaved Marvel of Peru edged with pink Pelargoniums, Nemophila, and the red-spined Chamæpeuce. The semi-hemispherical Dasylirion acrotrichum is here planted with good effect, surrounded by a border of silvery-leaved Pelargoniums, and other plants. One of the brightest and best of all the sub-tropical beds is a semi-circular one, planted with Musa superba and the silvery cut-leaved Artemisia judaica, margined with pink Pelargoniums, and an outer row of a dwarf-growing Artemisia Stelleriana; Funkia Sieboldiana also makes a bold and effective edging to a group of the graceful Aralia japonica, and the Fern glades are as usual very tasteful, the fronds of tall Dicksonias waving beneath the shade of lofty trees, while the bright green Scolopendrium-like Asplenium Nidus-avis, Dracænas, and Palms are plunged in the turf in close proximity to them. There is one shrub here which ought to be seen oftener in our parks and gardens than it is at present, and that is the glossy leaved Ficus-like Griselinia macrophylla, a near relative of the Aucubas, but scarcely so hardy: it is so pleasing in appearance that it deserves culture even as a pot plant, wherever a fresh-looking evergreen-foliaged plant is desired. Some stumps on which the Elk's-horn Fern is planted have their bases wreathed with Kangaroo Vine or some species of Ampelopsis, and in one of the glades some fine plants of the fresh green Pothos (Anthurium) acaulis, are very effective grouped along with Pandanus Veitchi, Monstera deliciosa, Dracæna australis, Palms, Tree Ferns, Platycerium grande, Aralia pulchra, and other noble-leaved plants. Sonchus pinnatifidus, golden-blotched Abutilons, Solanums, Cineraria platanifolia, Melianthus major, and the noble Gymnothrix latifolia, one of the freshest and most stately of all Grasses, make a good mixed bed. An oblong bed of glaucous-leaved, yellow-flowered Cannas is here made one of the most effective of all the groups we have seen this year by the addition of some single-stemmed cut-back specimens of Ailantus, the long feathery foliage of which is moved by the slightest breeze. A mass of Gunnera scabra, planted out some years ago on a spongy part of the lawn, is now very effective, indeed, one of the most natural and consequently most tasteful bits of planting in the whole Park. Several large beds of Ficus elastica, Aralia papyrifera, Ricinus communis, and Maize, are also well planted; in some of the larger beds Wigandia and other large-leaved subjects are planted, and margined with scarlet or gold and silver variegated Pelargoniums, Iresine Lindeni, Nemophila, and Gazania splendens; a circular bed of the bright green, feathery Acacia lophantha is just now very beautiful, margined with silver Zonals, purple Iresine, and Nierembergia gracilis. The two wavy or rather serpentine beds, which generally form a conspicuous feature in the sub-tropical garden, were being replanted at the time of our visit (August 29), the materials used being Alternanthera amœna, A. paronychioides, and Pyrethrum Golden Feather; a belt of Cannabis gigantea, a strong-growing Hemp, has here made a luxuriant growth, and as an edging to this bed Spiræa Filipendula has been planted. An oblong mixed bed of Erythrinas, golden-leaved Fuchsias, Zinnias, tuberous-rooted Begonias, mixed with Aralias, Grevilleas, Palms, Blue Gum trees, and other fine-foliaged plants, is very attractive, margined with Alternanthera versicolor and Golden Fig Marigold. One of the most graceful of all variegated Grasses is Eulalie japonica, which has here attained a height of 3 ft. this season, and is very effective grouped with fresh Palms and other fine-foliaged plants. A circular mass of a scarlet Zonal Pelargonium, named Montrouge, edged with lines of Coleus, Santolina, and Echeveria, is now very brilliant; indeed the Pelargonium is one of the best of all the scarlets which we have seen. Another oblong bed of Fuchsias and Petunias is edged with the large woolly-leaved Salvia argentea, the whole surmounted by the great waving leaves of Ailantus. A bed of India-rubber plants, on a carpet of Iresine Herbsti and I. Herbsti variegata, is strikingly effective. One of the most distinct and pleasing of all the arrangements we noted here is an oblong bed of the silvery-foliaged Solanum marginatum on a carpet of the deep purplish Heliotrope, edged with a golden-leaved Zonal Pelargonium named Gem of Brilliants, and white Nemophila.

Carpet or Formal Leaf Bedding.

The carpet beds here are bold and effectively planted, but they lack that delicate finish which characterises those at Cleveland House (see The Garden, p. 234). A couple of large circular beds, planted with glaucous Sedums, Echeverias, silvery Cerastium, Santolina, crimson Coleus, purple Alternantheras, and golden-leaved Stellaria, are pretty, and these are flanked by two oblong beds, consisting of blocks and panels of crimson, purple, and orange Alternantheras, on a carpet of Golden Pyrethrum margined with Sedum acre elegans. These beds are on a sheltered strip of green turf, backed by beds of large-leaved plants, shrubs, and trees. Two circular carpet beds planted with crimson and purple Alternantheras on a carpet of Golden Feather, Santolina, Echeverias, and the bright green Cerastium arvense, are pleasing in colour, but too flat and formal in design. An oblong panel bed deserves notice, the panels being composed of Alternanthera versicolor, A. paronychioides, and the crimson A. amœna, edged with Santolina and golden Mesembryanthemum, on a fresh, green carpet of Cerastium arvense, the latter being studded with Aloes, Sempervivums, and the orange-berried Nertera depressa, the whole bed being margined with a narrow line of Santolina and a double row of the glaucous Echeveria.

B.

SELECT PYRETHRUMS, PÆONIAS, POTENTILLAS, IRISES, AND PHLOXES.

Pyrethrums (double-flowered).—Aurora, creamy-white, orange centre; Brilliant, bright rosy purple; Carneum plenum, blush white; Comte de Montbron, rosy lilac, light centre; Floribundum plenum, rosy pink; Gloire de Stalle, purplish carmine; Imbricatum plenum, purplish carmine slightly tipped with white; Iveryanum, rosy carmine, light centre; La Belle Blonde, creamy white; Lischen, light rose, orange centre; Michael Buckner, rosy crimson, orange centre; Minerva, rose; Multiflorum, crimson, orange centre; Nancy, blush shaded with salmon; Ne Plus Ultra, blush white; Nemesis, lilac carmine; Peau Rouge, rosy crimson, orange centre; Perfectum, rosy lilac; Princesse de Metternich, pure white; Progress, rich crimson; Roseum album, rosy purple, white centre; Voi Lactée, white suffused with pink; Wilhelm Krampen, dark red; Rubrum plenum, rosy purple, rose centre.

Pæonias, varieties of sinensis.—Alba sulphurea, white with a tinge of sulphur; Belle Douaisienne, blush centre, petals sulphur tipped with puce; Candidissima, guard petals pure white, base of centre florets purple; Etendard du Grand Homme, brilliant rosy purple; Grandiflora nivea, blush white; Purpurea superba, violet-purple; Leonie, delicate Peach; Gloire patrix, rosy-pink centre; Augustin Dhour, purple-rose; Arethusa, rosy-lilac, delicate and creamy-white centre; Souvenir de Gaspar Calot, purple-rose, margined with pink and white; Ambroise Verschaffelt, brilliant reddish-purple; Maria Flouillon, rich satiny-rose; Duchesse de Theba, pure white centre, creamy-white slightly margined with crimson; Henry Demay, rosy-crimson; Princess de Salem Dyke, rose, light centre; Madame Chaumy, rose, margined light rose; Souvenir d'Auguste Miellez, rich crimson-purple; Vicomte de Forceville, rosy-pink; Faust, deep blush; Isabelle Karlitzky, purplish-rose; Officinalis rubra plena; Officinalis rosea plena; Officinalis alba plena; Sinensis Whitleyi, large single white with yellow centre, very fragrant.

Potentillas (double flowered).—M. Rouillard, reddish crimson; Belzebuth, dark crimson; Chromatella, yellow; Dr. Andry, scarlet, margined with yellow; Escarboucle, crimson; Belisaire, reddish orange; Vase d'Or, yellow; Le Dante, orange, shaded with scarlet; Louis Van Houtte, crimson; Phœbus, rich yellow; Le Vesuve, crimson margined with yellow; Versicolor, yellow suffused with brownish crimson; Vulcan, scarlet shaded with yellow; Variabilis flore pleno, yellow margined with scarlet; Eldorado, scarlet crimson, margined with yellow; Perfecta plena, bright scarlet crimson slightly with yellow; Imbricata plena, orange scarlet; Etna, reddish crimson, Panorama, yellow, heavily stained with scarlet; Nigra plena, dark crimson; Meteor, yellow suffused and blotched with scarlet; Meirsschaerti flore pleno, yellow veined and striped with crimson; William Rollisson, deep orange scarlet, yellow centre; Fenelon, orange and scarlet; Purpurea lutea plena, scarlet crimson slightly tipped with yellow.

Iris germanica.—Abou Hassan, bright yellow, lower petals copper reticulated with yellow; Arnols, violet suffused with bronze, lower petals rich velvety-purple reticulated with orange, red, and white; Aurea, chrome yellow and sulphur; Bocage, pale lavender, lower petals purple feathered with white; Bridesmaid, white suffused with lavender, lower petals reticulated with reddish-lilac; Cordelia, rosy-lilac, lower petals rich velvety rosy-purple beautifully reticulated and margined with white, flowers large; Darius, chrome-yellow, purplish-lilac margined with primrose and reticulated with white, flowers large; De Berge, chrome-yellow, lower petals rich crimson feathered with sulphur and yellow; Dr. Berenice, coppery-brown, lower petals ruby-purple reticulated with orange and yellow; Duchesse de Nemours, white, lower petals purplish-violet reticulated and margined with blue; Florentina, white suffused with lavender; Leopoldina, creamy-yellow, lower petals rich purple margined with sulphur-yellow and heavily striped and reticulated with white, flowers large; Mexicana, bright yellow, lower petals purplish-brown reticulated with sulphur; Minico, rich golden-yellow, lower petals bright crimson-brown reticulated with yellow; Pallida dalmatica, lavender-blue with light centre, flowers large; Queen of May,

rosy-lilac with primrose centre; Racine, primrose suffused with lilac, lower petals rosy-purple reticulated with white, flowers large; Madame Chereau, milky-white, all the petals beautifully edged and barred with violet; Spectabilis, rich velvety-purple shaded with black; Sultan, pale lavender, lower petals bright indigo blue, reticulated with white; Walner, azure blue, lower petals light purple slightly veined with white; Victorine, satiny-white blotched with purple, lower petals rich-glowing violet-purple veined and reticulated with white; Delicata, dark primrose, lower petals lilac reticulated and veined with orange and purple; Atro-violacea, reddish-violet shaded with black, flowers large; La Fristosse, bronzy-primrose, lower petals rich brownish-crimson heavily reticulated with yellow and white.

Phloxes.—Anais, white-purplish eye; Baron Duruffe, purplish-crimson; Coccinea, vermilion-crimson; Comte de Méronet, purplish-lilac, crimson eye; Edith, white, crimson centre; Gloire de Poiteau, rosy-lilac, white centre; Lothair, bright scarlet, crimson centre; Lucien Tisserand, mauve, crimson centre; Madame Andry, purplish-crimson, crimson centre; Madame Domage, white, carmine centre; Madame Moisset, rose, rosy-crimson centre; Madame Thibant, red, crimson centre; Menotti, rosy-lilac, white centre; Monsieur Guldenschuch, salmon-rose, purplish-crimson centre; Monsieur Taillard, salmon-red, purplish-crimson centre; Monsieur Malet, lilac, purplish centre; Mrs. Laing, rosy-lilac; Professor Koch, rosy-crimson, crimson centre; Rêve d'Or, bright salmon, cherry-red centre; Roi des Blancs, pure white, stout habit, dwarfed; Souvenir de Poteven, rosy-pink, slightly suffused with violet, crimson eye; Venus, white, violet-purple centre; Richard Wallace, white, carmine centre; Sparte, purplish, rose-crimson centre; The Queen, white, tall.

—"The Gardener."

THE NEW ROSES OF 1874-75.

In the autumn of 1874 no fewer than seventy varieties of new Roses were announced by French rosarians. As I have seen the greater part of these varieties in flower, either in the grounds of the raisers or in my own nurseries, I have thought it may be of some service to intending purchasers to give a brief description of such as have pleased me best, or have been recommended to me by those in whose judgment I have reason to confide. And first of the Hybrid Perpetuals, Amelie Hoste is a large, full, and finely-shaped flower, of a flesh-tinted rose colour, very distinct and promising. Antoine Mouton is a very large, full, and finely-formed globular flower, of a bright rose colour, the reverse of the petals silvery. Arthur Oger is one of those deep velvety, purplish-crimson Roses in the Gloire de Ducher style; the flowers are very large and full. Bernard Verlot is something in the way of Lord Raglan, the flowers being of a scarlety-crimson, shaded with violet-purple, but the form is more globular. Casimir Perier has dark ruby-red flowers, shading to light red, and possesses the good quality of blooming constantly. Comtesse de Rocquigny is a pretty and free-growing Rose, flowers white, tinted with salmon, not large, but of perfect globular form. Comtesse de Serenyi bloomed grandly here under glass, its large, globular flowers, pink shaded with rose, attracting general attention. Gonsoli Gaelano is distinct and pleasing; the flowers are glossy white, slightly tinted, large, and full. Hippolyte Jamin is good, the flowers are bright rose shaded with carmine, large, full, and globular. E. Y. Teas is a large Rose, the colour deep cerise-red, bright and striking, the flowers are globular, full, and well formed. La Rosière is also a large, full, and well-formed flower, amaranth shaded with bluish-black. La Souveraine is a fine, bold flower, much in the way of Madame Clemence Joigneaux, but much more double. Madame Lefebure de St. Ouen has bright cerise-red flowers, large, full, free, and sweet. Madame Rougier is a large, full Rose, of cupped form, the colour is glossy rose. Mdlle. Claire Mathieu is a rose-coloured flower, promising to be a free and showy garden Rose. Marie Cordier is a large, well-formed flower, colour deep carmine, illuminated with fiery red. Mariette Biolley is a good garden Rose, fresh in colour, large, and full. May Turner is a very large Rose, full, and of good form; the colour is salmon-rose. Princesse Antoinette Strozzio has bright rose-coloured flowers, which are large, full, and well-formed. In Souvenir de Mère Fontaine the flowers are bright red, the base of the petals shaded, large, and full. Souvenir du Baron de Sémur is a fine colour, velvety-purple, shaded with fiery red and black; the growth is not vigorous here. Villaret de Joyeuse stands well among the novelties of this year; the flowers are rose shaded, large, full, and finely formed. There is one Perpetual Moss Rose—Soupert et Notting, a bright rose-coloured flower, of the size and shape of the old Cabbage Rose, bearing more moss than some of its congeners. There are also some Tea-scented Roses with which I am more than satisfied. Aline Sisley is a full, well-formed violet-red Rose, a colour new and much wanted in this section. Comte de Sembui produces coppery-salmon flowers, which are large, full, and finely formed. Jean Ducher is salmon-yellow, the interior of the flower shaded with peach colour. This is a large, full, and free-flowering globular Rose. Madame Bonnet Eymard is white with yellowish centres, not large, but full and very free. Madame Devoucoux produces nicely-formed flowers of a pale straw colour. Madame Thérèse Genevay has flowers of a rosy-peach colour, large, full, cupped, and free. Marie Guillot, a white Rose slightly tinted with yellow, promises well; it is large, full, of good form, hardy, and free. Marie Opoix is another white with yellowish centre, sometimes tinted with pink, also of good form. Perle des Jardins flowered finely here; the colour is canary-yellow, large, full, well-shaped, hardy, and free. Shirley Hibberd is new in colour—nankeen—and flowers freely. Thérèse Loth bears rose-coloured flowers with brighter centres. The above includes the varieties which have most favourably impressed me in this their probationary state, but I do not wish it to be inferred that I condemn those which I have left unnoticed; neither do I pass any opinion on the English seedlings, because they are open to inspection by any one who may be inclined to visit them in the nurseries of the raisers. I may say, however, in conclusion, that I think this year has produced more than the average number of really good new varieties.

William Paul.

Renovating a bad Lawn on Chalk.—Could any of your skilled contributors help me to renovate a bad lawn? It was constructed four years ago on a chalk slope; the soil was wheeled back from the upper half and thrown on the lower half, thus bringing the whole on a level. But sufficient care was not taken to preserve the good soil, and the upper half, I fear, has the coarse, cold chalk all but on the surface. The soil was sown with good seeds, but the Grass has never done well, being patchy and very coarse in many places. The upper half is very liable to become almost scorched up in hot weather, as it was during July last; and now after the rain it is, to a great extent, covered with an ugly fungus—at least such I assume it to be. It looks something between dark green seaweed and frogs' spawn, and appears to be spreading. I have at times tried various remedies; spread fresh soil over the surface, wood ashes, Watson's sand, rotten manure, but all to little purpose. I fear that if I turfed it the turf would share the same fate, unless I first broke it up, covered it with soil to a fair depth, and then turfed it—a very costly process. Perhaps the drainage is defective, but this fungus, I see, is appearing on a steep slope (chalk also) which has been turfed. If any one could suggest a remedy, I should be greatly obliged.—A Subscriber.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Sweet-scented Virgin's Bower (Clematis Flammula).—Amongst the many good creepers, new and old, for covering walls and trellis work, this is one of the best, hanging just now in wreaths of white, perfuming the air. It is a useful sort for cutting from, and it is admirable in many ways either in the wild garden, the shrubbery, over the cottage porch, gardanding a railing, tangled among the shrubs in a villa garden, clambering up an old tree-stump, swinging on chain-wreaths, or taking care of itself in a hedgerow.—A. H. T.

Green Carpet Bedding Plants.—There are several dwarf, bright, green-leaved plants suitable for carpet bedding, among which Sedum acre, S. lydium, Cerastium arvense, Pyrethrum Tenthatchewii, Tagetes signata pumila, are, perhaps, the most popular; but this year Alternanthera Pulegium gibraltarica has been used with excellent effect for that purpose, forming, as it does, a flat surface of unsurpassed verdure. Another plant, not sufficiently well known for the same purpose, is Mesembryanthemum cordifolium, the green-leaved type of the soft, yellow-leaved plant now used so extensively in the parks.—B.

Bedding Plants from Seed (see p. 213).—There are many good plants suitable for bedding that are hardy or will stand the winter well in a cold frame, such as Sedums, some of the Echeverias and Sempervivums, Calceolarias, Violas, &c. Violas and Pansies are perfectly hardy, and will make a good show of bloom in summer. The different forms of Tropæolum compactum, the dwarf yellow bedding Marigold, the rich and varied forms of the bedding Phloxes, Ageratums, Golden Feather, Amaranths, Beet, &c., can all be raised from spring-sown seed. Lobelias also, although best from cuttings, will yet come fairly true from seed, and these are indispensable in any effective bedding arrangement.—D.

Othonna crassifolia.—This is a neat greenhouse shrub of trailing habit, having somewhat the aspect of a Sedum, with wiry, elongated stems, set with short, cylindrical, fleshy leaves. The strictly drooping habit of this plant forms a very distinct and interesting subject for a hanging basket or vase in the conservatory, both current and mature growth being gracefully dependent. The flowers are produced from the extreme points of the lower growth, and may be compared to a miniature Mesembryanthemum or Aster-like blossom with golden-yellow rayed petals. When planted out upon exposed mounds of rock-work in sunny exposures, the leaves of this interesting plant sparkle or glisten in the sunbeams, arising from the presence of transparent glands or ducts within the cellular leaf-texture.—W.

THE INDOOR GARDEN.

A NEW STOVE SHRUB.

(PHYLLANTHUS ROSEUS PICTUS.)

This slender-growing, gracefully-branching shrub has a habit not unlike that of the common Snowberry, and is remarkable for the lightness and variety of its variegated foliage. In the accompanying illustration the natural size of the pinnate foliage is given, and its variegation as far as can be done without colour. The plant itself is by no means difficult to manage, and when grown in small pots forms a pretty little shrub 1 ft. or more in height, a condition in which it is very useful for dinner-table or other decorative purposes. Old plants of it cut back furnish fresh brightly-tinted sprays well adapted for cutting for vases or even for bouquets, as they associate well with fresh green Maiden-hair and other Ferns. As in the case of Ferns, the best developed growths should be selected for cutting. The foliage is of a dark green colour, variously blotched and marbled with creamy-white, the stems and tips of the shoots being of a bright rosy-pink colour. No two leaves are alike in variegation, some being nearly pure white, while others, especially the youngest, are deeply suffused with rose or rosy-purple. The plant grows satisfactorily in a warm greenhouse or plant-stove, and well deserves culture, being one of the most elegant of new fine-foliaged plants. It is one of Messrs. Veitch's latest introductions, and will shortly be distributed. It received first-class certificates at South Kensington and Regent's Park when exhibited during the present year.

B.

Phyllanthus roseus pictus.

EUPHORBIAS.

Although the genus Euphorbia is very prolific as regards species, still there are but few that commend themselves to the attention of cultivators of stove plants—not more than two, indeed—E. jacquiniæflora (or fulgens) and E. splendens, from the Isle of France, the latter at one time met with in every stove, but of late years not so much grown as formerly. The fashion for button-hole flowers has, however, brought it into favour again, as the colour and the endurance of its blossoms especially adapt it for the purpose. There is another very useful property possessed by this species of Euphorbia to an extent existent in but few plants, and that is, the continuous succession of flowers which it produces. A fair-sized specimen of it under good treatment will keep on blooming the whole year round. I have had a plant of this Euphorbia that was never out of flower for seven years, and for anything I know would have continued as much longer, had it not been removed (it was on the end wall of a stove) to make way for some alterations that were considered necessary. Where cut flowers for the above purpose, or for putting in small glasses, are required, I know of no plant that will produce them so continuously; it also possesses the merit of being easily grown. Its general habit is so different from that of E. jacquiniæflora as to demand separate treatment. E. splendens is armed with numbers of stout spines; the leaves are comparatively small, and the shoots of a succulent character. Cuttings made from firm pieces of the wood will root at any time of the year, but are generally the most satisfactory when struck in the spring. Pieces of the points of the shoots, if taken off 4 in. or 5 in. in length, and laid for a day in the stove after being severed from the plant, so as to allow the base to dry up a little, should then be put singly in small pots drained and filled with a mixture of two-thirds silver sand to one of sifted loam; they will root readily, but must not be kept too wet or covered with a propagating glass, as from their succulent nature and the comparatively little leaf surface they possess, they do not require to be confined to prevent flagging as in the case of most plants. They are also liable to rot if covered in a moist atmosphere; place them in a temperature of 65° in the night. When struck they may be allowed to remain in the small pots until they have made a considerable quantity of roots. As solar heat increases the house may be kept 5° warmer in the night, increasing it to 80° in the daytime with sun-heat. In June put them in 5-in. pots; these should be drained to one-fourth their depth, covering the crocks with a little fibrous material. They will do the best in good loam broken by hand in small pieces; to this add one-sixth crocks, broken to the size of horse Beans, and a like quantity of sand. In the cultivation of this Euphorbia thorough drainage and porosity of soil are indispensable to success, being careful not to over-pot; it does not require nearly so much root-room in any stage of its growth proportionate to its size as most plants; no shading will be found necessary, as it is naturally a sun-loving subject, the lighter the situation and the more fully exposed to the sun the stouter will be the growth, with increased amount of bloom. As soon as they have got fairly into growth take off the points to induce them to break several shoots; give water as required, but the soil should never be kept so wet as for plants possessing more leaf surface and of a less succulent character. The treatment needed through the summer will be nothing more than a continuation as so far recommended, giving air every day, and keeping them in the driest part of the house, as they do not want so much moisture in the air as the generality of stove plants, the drier atmosphere of a Pine stove being more in accordance with their requirements. In autumn reduce the heat and keep them through the winter in a night temperature of 60°, with 5° or 10° more in the day. In the spring, again, gradually give more heat as the days lengthen, and shift them into pots 2 in. or 3 in. larger, using similar soil to that previously advised. The plant is naturally of a branching, bushy habit, and does not generally require much stopping; but if such appear to be needed, let it be done in time to induce their being well furnished with shoots at the base; it is naturally so free a flowerer that it will bloom in a very small size without interfering much with its growth; consequently as the flowers appear they may be allowed to open, and can be used as re-

quired. Put a stick to the main stem sufficiently stout to give the necessary support, and a few to the outer branches, as the head is naturally heavy and requires to be thus held in shape. The after management requisite will simply be a continuation of the above treatment, each year giving a little more pot room as required until the specimens get to the size wanted, when they may be kept in a growing condition by the help of manure-water during the summer, at times examining the drainage to see that it is right. The plant is well adapted for covering a wall in the stove, and there is no situation where it looks better, or where its peculiar shape and intense scarlet flowers are seen to more advantage; but the position in which it is placed should always be near the glass on account of its light-loving qualities.

E. jacquiniæflora is very different in habit and general appearance from the last; it blooms in winter, at which time its intense scarlet-flowered, wreath-like shoots are unsurpassed by any plant in cultivation. It is a free-grower, and equally free in blooming; the flowers last well either on the plant or when cut and placed in water; it gives a succession from a second growth, which the plants will make after the first flowering shoots have been cut. The beauty of the flowers is much enhanced by the dark-green lanceolate leaves, which form a background to them; it combines well with almost any other description of flower, being especially suited for using in large vases, where its flat sprays can with the greatest advantage be employed as a base for lighter-coloured things. Some growers have experienced a difficulty in striking it from cuttings. The soft sappy nature of the young shoots, if taken off after they have extended considerably, causes them to be very subject to damp; in fact, if cuttings be made in the ordinary way very few will root, but if in the spring the young shoots that are made after the plants have bloomed are taken off with a heel when about 5 in. or 6 in. in length, and inserted in small pots, drained and filled with silver sand, placed in a temperature of 70° and covered with propagating glasses, not one in twenty will fail; it is the heel of partially solidified wood that is essential to success, which must be kept quite moist; so managed, they will root in a few weeks; after that remove the glasses and let them have plenty of light. When they get fairly established, move them into 4-in. pots; they thrive well in good fibrous loam, to which add one-fifth of sand, and drain the pots sufficiently, as the roots are very impatient of stagnant moisture. Do not give too much water till they get well hold of the soil. The plant has naturally an erect habit; not disposed to branch out much. To counteract this the shoots should be stopped or bent down when they get fairly into growth, so as to induce them to break back. The temperature may now be allowed to rise in the day to 80°, with sun-heat, giving air in the morning, according to the state of the weather, and closing while the sun is on the glass sufficiently to raise the heat for an hour or two up to 85° or 90°, syringing overhead at the same time. Be careful at all times, but especially after potting, not to overwater, for the plant does not make so many roots as most things, and will not bear the soil being too wet. They will require a thin shade when the sun is powerful, but should have plenty of light, or the natural straggling habit will be still further increased. By the end of June they ought to be moved into their flowering-pots; 7 in. diameter will be large enough, using soil similar to that in which they were last put, with the addition of one-sixth rotten manure. Again tie down the shoots, bending the points down considerably, which will cause several of the back eyes to push. With this Euphorbia, as the plants get larger, bedding the shoots is preferable to pinching out the points, as it will induce more eyes to break. Place a single stick to each plant, which will be sufficient to support them; continue the treatment as to heat, water, air, and a thin shade when necessary, until the end of August, when dispense with shading and the use of the syringe, giving more air, which will gradually suspend further growth and ripen up the shoots. As the autumn advances, reduce the temperature to 60° in the night, giving 5° more in the day. If they be required in bloom by the end of the year, it will be necessary to keep a portion of the plants 5° warmer, standing them where the tops of the shoots will all but touch the glass. This is necessary, to impart both colour and substance to the flower. As the flowers become apparent at the axils of the leaves, the plants will be greatly benefited by manure-water, which will not only assist the first blooms they make, but enable them to make the second growth strong, which will also bloom. Such plants as are kept cooler to succeed the first lot must not have too much water at the roots, especially if kept a little under 60° in the night; but it is not safe to admit them to a much lower temperature than this; before they are required to bloom they must be kept warmer, which will in a few weeks cause the flowers to open. After the flowering is over allow the soil to get considerably drier, and head the plants down to within 6 in. of the pots, keeping them in a temperature of 65° in the night, and giving no more water than will just prevent the soil getting quite dry, until they have broken, and made several inches of growth, when, if more plants be required, the shoots may be taken off and struck, as in the preceding spring; the rest of the plants should be turned out of the pots, and two-thirds of the old soil removed, giving them 2-in. larger pots, which will be large enough to grow them on through the ensuing summer, assisting them with manure-water when the soil gets well filled with roots, treating in other respects as advised for the preceding season. This Euphorbia is also very suitable for growing on a back wall, in which position it looks well; but the flowers will not be so high-coloured as when they expand in close proximity to the glass. If planted out in such a situation the border should be limited in size, for if the roots be in too great a body of soil they are very liable to decay when the plant is hard cut in, which it requires after blooming, at which time and until some growth has been made, the soil must be kept almost dry. Through treatment the opposite of this, the Euphorbia, when so situated, very often dies after being cut back; otherwise, as also when grown in pots, it will last for years. Both these Euphorbias are less subject to insects than most stove plants, although thrips and spider will sometimes attack them; for these syringing and fumigating afford the best means of destruction. Should mealy bug make its appearance, lay the plants on their sides and repeatedly syringe freely with tepid water, washing with insecticide in the winter when at rest, dressing similarly for brown scale in the dormant season, and using the sponge when the plants are growing, as at that time they would not bear the insecticide strong enough to kill the insects. White scale is so difficult to thoroughly eradicate when once it gets upon stove plants such as these that are easily propagated and grown quickly, that it is better to start afresh with clean cuttings, which should be inserted as previously recommended. T. Baines.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Cable Edgings.—For conservatories, corridors, or any glass structure requiring a good permanent edging, especially when the plants are set out in beds, I find few edgings have a better appearance than these. They are unobtrusive and neat in appearance, being, as the name suggests, made in imitation of a twisted rope or cable, and if well laid down at first on concrete foundations under cover, they may be pronounced to be indestructible.—J. G.

Calceolaria salicifolia.—A neat, evergreen, cool, greenhouse shrub, of erect branching habit, from 18 in. to 2 ft. in average height, with oblong-lanceolate leaves, obscurely crenate at the margins. Its flowers are produced in axillary and terminal cymose trusses, the blossoms pouch-shaped, of a brilliant lemon-yellow, and pure white. Its habit well adapts it for a greenhouse or conservatory wall shrub where well exposed to sunlight, and it is equally suited for planting at the base of a pillar. Its growth is somewhat like the well-known C. amplexicaulis, and like that, the present plant is very suitable for training to an erect cone-shaped outline upon a wicker or skeleton-trellis; in this manner its elegant flower trusses of lemon-yellow form a beautiful and highly decorative effect in the flower garden during the summer and autumn months.—D.

Cuphea Hillfieldiana.—This new plant has been recently introduced to gardens from Mr. Saunders's late collection at Hillfield. It has a neat, dwarf, compact, branching habit 9 to 12 in. in height; its aspect and growth take after the style of C. platycentra, with small, acuminately ovate, glossy, green leaves, and numerous trumpet-tubed blossoms 1 in. long, of a rich sanguineous-red on the upper side, and creamy-white on the under one. From the funnel-shaped mouth of each tube there are six flatly expanded flower-lobes, the two diverging upper roundish ones are of a rich blood-crimson colour, and the four smaller ones are violet-purple. For pot culture in a cool greenhouse in summer, or the warm conservatory or plant-pit in the winter, it is most useful by its long continued succession of bloom, which is produced nine months out of the twelve, and often yielding cut flowers for the select vase or bouquet, when such are most scarce and valuable in their season.—W.

TREES AND SHRUBS.

THE WILLOW AS A SEA-SIDE TREE.

Neither as an ornamental nor as a timber tree is the Willow very extensively grown, unless upon the margins of lakes and rivers, for which situations it is well adapted, and as it grows nearly as fast as a Gum tree does under the most favourable circumstances, it soon forms a cover; but we are not so sure that its excellence as a sea-side tree is so well known, or that it is used as extensively as it might be for sheltering purposes near the sea-coast; yet it would appear to be one of the best for this purpose. Travellers on the Lancashire coast, between Blackpool and Southport, cannot but have noticed how extensively the Willow is planted in belt lines to protect plantations and gardens from the sea-breeze, which frequently sweeps along this part of the coast with unusual severity, and how well it grows in the light sandy soil of the district. In some places it is growing on what were a few years ago nothing but sand-banks. In the well-kept public gardens at Lytham, which extend to within about fifty paces of high-water mark, the Willow is planted on all sides next the sea for shelter, and though it is only some three or four years since the gardens were made and planted, and though the soil is very poor, the Willows are now 20 ft. or 30 ft. high, and give a waving, feathery lightness of aspect to the scene, and an ornamental appearance to the grounds which one would not think could be produced by the Willow under such circumstances. Here, and elsewhere in the neighbourhood, the Elm, Beech, Sycamore, Oak, Laburnum, and other deciduous trees are as brown and withered in foliage during the summer as if a severe black frost had passed over them, and show generally how ill the situation suits them; but the Willow towers aloft, and is green and luxuriant to its topmost branches. In the extensive parks around Clifton Hall, and close to the sea, we also noticed that the plantations were all protected in the same way from the blast. In some places the Willows appeared to be of a good age, and were considerably taller than the Spruces, Oaks, and other trees which they guarded from the storm. The Poplar seemed to stand the blast next best to the Willow, and afforded variety; but this also suffers visibly from the gales.

For general planting, however, near the sea, the best subjects are evidently to be found among evergreens, though some of these do not appear to thrive any better than the deciduous trees, and among the worst is the Portugal Laurel. Within the shelter of the low walls in front of the villa gardens facing the beach it grows, but above the shelter of the wall it makes no progress, and the tops look as if they had been scorched by fire. Beside the Laurel, and fully exposed to the blast—and we should say within reach of the spray from the sea—the Laurustinus thrives amazingly, making a large and densely-furnished bush, such as is seldom seen in inland situations. It is quite a substitute for the Laurel. The Aucuba japonica does well, the Hollies middling, and, what is rather remarkable, the golden variegated kinds seem to grow better than the green ones. The Sweet Bay, Arbutus, evergreen Oak, and Privet also do well. Fuchsias grow luxuriantly in summer, but are cut down to the ground in winter by frost. We noticed some of the finest varieties growing and flowering well against a paling. What a magnificent subject the Fuchsia is when grown freely out-of-doors! It cannot be too freely used about sea-side residences, and a little protection in winter when the frosts are severe would save the bushes and render cutting down unnecessary. It is in an insular position, however, where it is most at home. In the Isle of Man, almost within sight of the Lancashire coast, it is almost an evergreen, and grows 15 ft. or 20 ft. high. Great limbs of the old Riccartoni variety are to be seen pushing over the walls of the cottage gardens into the highway; and huge bushes that would dwarf the finest specimens at our flower shows into insignificance are common everywhere. Horticulture and cottage gardening are, however, at rather a low ebb in Manxland, and public and private enterprise might, we think, do a deal more for both horticulture and arboriculture. The island is undoubtedly fitted for the growth of many species that would perish in England. Where Fuchsias, Hydrangeas, shrubby Calceolarias, Myrtles, and greenhouse Veronicas, &c., stand the winters without injury, many other so-called tender subjects would doubtless thrive—at least in the sheltered and picturesque nooks and valleys, of which there are many in the island. As it is at present, the landscape has a treeless aspect, though there is nothing to hinder its ravines and glens from being furnished with a luxuriant vegetation, as the planting of one of the most pleasant resorts in the island, viz., Glen Ellen, testifies. Here the Royal Fern (Osmunda regalis) grows, or used to grow, in abundance, and of giant size, as it does or did grow elsewhere in the island—for it is not so common now, owing, no doubt, to the wholesale exportation of the plant by botanising visitors, so called, who visit the island every season and ransack its every corner.

Among climbers the Ivy seems to grow freely near the sea. I did not observe a single good Rose anywhere on exposed walls. The Passiflora cœrulea does well, both growing and flowering as freely as possible; some of the houses I noticed were covered with it. Most of the usual bedding and herbaceous plants succeed quite near the sea if sheltered from cutting winds, and Carnations the sea seems to suit surprisingly, for it would be difficult to match the plants which I observed growing in front of some of the houses, either in health or the abundance and quality of their flowers. The beautiful Dielytra spectabilis seems to be a great favourite, judging from the immense quantity of it grown as stock in the nursery of Mr. Maries, at Lytham, who grows it in quarters like Potatoes, and has perhaps the largest stock of it in England. C.

Laburnum robustum.—This variety is remarkable for the number and thickness of its branches, the density and compactness of its foliage, and for the tendency which its branches have to incline downwards, forming, therefore, a weeping variety of this well-known tree. Its leaves and leaf-buds are glaucescent from the down with which they are covered. The flowers are not very remarkable, the bunches being small, and not particularly abundant. It originated by dimorphism from the common Laburnum, and seemed on its first appearance to form two perfectly distinct plants. Thus whilst the original type, with its thin and scattered branches and its small and narrow leaves, formed a tall, meagre-looking tree, the L. robustum grew into a very compact bush, with strongly-curved branches more or less pendent, producing a most striking contrast. The Laburnum flowers at least a fortnight before the variety to which it has given birth. Again, while the parent fructifies abundantly, the offspring hardly yields any seed at all. Springing, therefore, from the same root and nourished by the same sap, we find two kinds of trees which are certainly much more distinct than many plants which naturalists recognise as true species. Grafted at a certain height, the L. robustum forms compact bushes with pendent branches, which are not altogether devoid of interest from an ornamental point of view. Such is the description of this new variety as given by M. E. A. Carrière, in the "Revue Horticole," but he omits to state where it can be obtained.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Pavia macrostachya.—This highly-ornamental dwarf tree has been a mass of bloom during the past few weeks. It is one of the best-flowering small trees (or rather shrubs) for decorating shrubberies and other ornamental grounds at a season when but few trees or shrubs are in blossom. Its flower-spikes are large and produced in great profusion. Cytisus nigricans is also a valuable, late-blooming, handsome shrub; its showy yellow flowers are still (Aug. 24th) lingering on its beautiful green twigs.—A Forester.

The Size of Wellingtonias in England.—Can you inform me to what size the Wellingtonia has attained since its introduction into this country, and where the finest specimens of this beautiful tree may be seen?—W. W. [The tallest specimen of this tree we have seen in England is at Beauport, near Battle, in Sussex. It is between 40 ft. and 50 ft. high, and a healthy, beautiful specimen. Some of our readers may, perhaps, know of finer specimens.]

The Camellia at Killarney.—This is perhaps the first example of the Camellia treated as a hardy shrub to be seen anywhere in these islands. It forms an apparently stemless spreading bush, semi-globular in form, over 50 ft. in circumference, and some 6 ft. high in the centre, and quite feathered to the ground. In the early months of the year it is literally laden with blooms. It never has, according to the "Irish Farmers' Gazette," any protection whatever, except when in flower, when a canvas awning is placed over it, merely for the purpose of preserving the beauty of the flowers.

American Tree Seeds.—In Mr. Meehan's list of tree and other seeds sent to us from Germantown, Philadelphia, we notice the names of the following new or rare kinds, viz., Abies concolor, A. Engelmanni, Acer glabrum, Andibertia incana, Cercocarpus parvifolius, C. ledifolius, Chilopsis linearis, Clematis ligusticifolia, Fraxinus anomalis, F. Californica, F. Utahense, Purshia tridentata, Peraphyllum ramosissimum, Pinus Llaveana, Prunus fasciculata, Rhus trilobata, Symphoricarpus rotundifolius, Yucca baccata, Y. brevifolia, and Y. angustifolia.

PLATE XXXVII.

THE HYDRANGEAS.

(WITH A COLOURED FIGURE OF H. PANICULATA GRANDIFLORA.)

By W. B. HEMSLEY.

It is a striking fact that some plants have soon after their introduction become dispersed over the whole country in a very short space of time, whilst others, which are no less deserving of cultivation, remain unknown to a large majority of the lovers of flowers. To the former category belongs one variety of the Hydrangea Hortensia, or common Hydrangea, which has been familiar to me from seeing it in cottage gardens as long as I can remember. That is the variety with green leaves, purple-spotted stems, and enormous trusses of large flowers, which are of a greenish colour when they first open, afterwards changing to a soft pink, and finally becoming again green. Sometimes the flowers are of a more or less deep blue colour, which is either produced artificially, or it is due to the nature of the soil in which the plant is growing. Since the introduction of this variety many other very beautiful varieties of the same species have been imported, as well as varieties of two or three other species; but none of them have yet become what one might call popular plants. It is difficult to assign a reason for this neglect, but perhaps it would not be wrong to say it is because nobody has taken them up and properly cultivated them. As soon as one gardener pays particular attention to the cultivation of a certain plant, others are sure to follow, and the plant, if worthy of it, quickly becomes a general favourite, and known to the outside public. Hoteia barbata, known in gardens as Spiræa barbata and japonica, is an illustration of this uncertain fate of a valuable ornamental plant. It is now more than forty years ago that it was first brought to Europe by Dr. Siebold, but as a border plant it did not make way, and almost passed into oblivion. However, when somebody discovered that it forced well, it soon was seen in every greenhouse, and sent to the markets by hundreds and thousands. Let some one, then, grow some of the beautiful varieties of Hydrangea described below, and the result will be satisfactory. It should be remembered that nearly all of these varieties were raised by the Japanese, with whom they are great favourites. Even as long ago as Dr. Siebold's time in Japan, many of them were cultivated throughout that country, and from what he says respecting the genus there must be many more worth introducing. As to their cultivation, no more than ordinary care is needed, and they are easily propagated from cuttings. The treatment recommended for the common variety will suit most of the Japanese varieties. Perhaps none of the others will ever become so valuable for a variety of situations, for the common one succeeds in open gardens, and in close, shady yards in towns, either inland or near the sea; and, as a pot plant, it is one of the most striking. All the true Hydrangeas produce either constantly or occasionally two kinds of flowers, which it may be worth while describing here. This is easiest done by reference to the accompanying plate. Towards the summit of the panicle there are several smaller flowers with five small white petals; all the others are larger, of a different colour, and either with or without stamens. An examination of the smaller flowers, as here depicted, would reveal the presence of a minute calyx outside of the white petals, and of stamens and ovary (future seed-vessel), within the petals. Such flowers are termed fertile in the following descriptions. The larger flowers below, and all those of the common variety of H. Hortensia, will be found to possess only one floral envelope, which consists of the enlarged calyx-lobes or sepals. The petals are entirely suppressed, and usually also the stamens and ovary; hence these flowers bear no seed. In contradistinction to the others, these flowers are termed sterile, neuter, or barren, and the relative proportions of sterile and fertile flowers of any particular variety give it its special character. Sometimes the two kinds of flowers are intermixed, sometimes they are all fertile, and sometimes they are all sterile, so that different varieties of the same species may have a widely different appearance. Occasionally, as in H. Hortensia stellata, the stamens are developed as petals, forming double barren flowers. Something similar occurs in the Guelder Rose, but here it is the corolla (petals) which is enlarged in the barren flowers. In the wild variety, it will be remembered, only the outer ones of each cluster are enlarged, whilst in the cultivated variety, the Snow-ball Tree, all of them are barren, and therefore it can be propagated only from cuttings or layers. This explanation will render the description perfectly intelligible. Now a word as to the nature and distribution of the Hydrangeas. Between thirty and forty species are known, inhabiting China and Japan, the mountains of Northern India and Java, North America, and the mountains of Central and South America, as far as Chili. Those inhabiting Central and South America differ from the others in being true evergreens, with thick, leathery leaves, and in having no sterile flowers: they are regarded by some botanists as constituting a distinct genus under the name of Cornidia. None of them are described below, as they are not in cultivation, and are not remarkable for the beauty of their flowers. All the others are deciduous, or only half evergreen shrubs or small trees. Treated as herbaceous plants, that is, the stems cut down annually, they will succeed in most parts of the United Kingdom; but my experience of them is not sufficient to say whether or not they will all flower as freely as the common one if treated in this manner. At all events, many of them are deserving of a trial in the open ground, and most of them are suitable for a cold conservatory or greenhouse.

Besides the true Hydrangeas, there are several Japanese shrubs belonging to the Hydrangeaceæ which might easily pass for Hydrangea itself, but they present floral differences which entitle them to generic rank. Some of these are already in our gardens, whilst others have not yet been introduced. Schizophragma hydrangeoides is a very handsome, half-woody, deciduous climber or trailer, with ovate or cordate, sharply-toothed, long-stalked leaves, resembling those of a Poplar, and small white flowers. But the most remarkable character of this plant is the singular transformation of the flower-stalks or flowers of the circumference of the inflorescence into large, white, leafy bracts, which persist and become almost coriaceous, and exhibit a very prominent venation. According to Siebold and Zuccarini ("Flora Japonica," 1835), this was a favourite shrub in Japanese gardens at that date, but I am not aware that it has ever been introduced into Europe. It grows in the higher valleys of the lofty mountains of the Japanese Islands, associated with Hydrangea (especially H. virens), Diervilla, Azalea, Andromeda, &c. The Japanese call it the Trailing Snow Apple. It trails and climbs over rocks throwing out roots and attaching itself after the manner of Ivy. For certain purposes, this would doubtless prove a valuable acquisition. Oldham says it is rare in the neighbourhood of Nagasaki, and Siebold informs us that it grows about 3 ft. high in gardens, when growing erect. Deinanthe bifida is another shrub or sub-shrub of the same family, but this, as well as the two other genera mentioned below, has numerous stamens. The leaves are thin and membranous, and double-pointed. In this the flowers are also white, but the petals of the fertile flowers are larger than the calyx-lobes of the apetalous barren ones. It inhabits shady woods, and is also cultivated in the gardens of Yeddo. There is a plate of it in Maximowicz's "Revisio Hydrangearum Asiæ Orientalis." Platycrater arguta is a dwarf, intricately-branched, deciduous shrub, 3 ft. to 4 ft. high, with long, narrow, taper-pointed, membranous, sharply-toothed leaves, sometimes nearly 1 ft. long, and large white flowers somewhat resembling those of a Bramble. All the flowers are fertile in the specimens I have seen. This shrub was introduced into Europe about ten years ago by Maximowicz, but it does not appear to have become very common. There is a figure of it in Regel's "Gartenzeitung," 1866, t. 516, as well as in the "Flora Japonica." In the latter it is represented with some sterile flowers, after the style of those of some of the true Hydrangeas. It grows in the mountainous regions of the northern parts of Japan, in humid places, overhanging the banks of streams and trailing over rocks. It is cultivated almost throughout Japan, but succeeds better, Siebold informs us, in the northern parts. The last to notice of this group is Cardiandra alternifolia. This, as the specific name indicates, differs from all others of the group in having alternate instead of opposite leaves; but Dr. Regel ("Gartenflora," 1865, t. 486) states that under cultivation it

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THE PLUMED HYDRANGEA. (H. PANICULATA GRANDIFLORA).

sometimes has opposite leaves. It is a pretty little half-shrub, with herbaceous stems, lanceolate, deeply and sharply-toothed leaves, and terminal cymes of rose-pink or white flowers, some of the outer ones sterile, with three enlarged sepals. This is a perfectly hardy plant, and very attractive, growing about 2 ft. high. This also was introduced into Europe by Maximowicz, and there is a figure of it in Regel's "Gartenzeitung" for 1865. Siebold says that the flowers are of a blue colour in wild specimens.

Descriptions of a Selection of Species and Varieties.

1. *Species, Native of Japan or China.*

1. **The Nettle-leaved Hydrangea** (H. hirta, *Siebold and Zuccarini*, "Flora Japonica," 1, t. 62).—A dwarf, intricately branched shrub, 3 ft. or 4 ft. high, with slender, more or less hairy, flexuose branches, and deeply-toothed, Nettle-like leaves. The leaves and branches become nearly or quite glabrous with age. The white flowers are all fertile, that is to say, none of them have enlarged sepals, and they are very small, and borne in terminal cymes from 2 in. to 3 in. across. This, although not a showy species, seems, judging from dried specimens, to be a very pretty, compact-growing, dwarf shrub, producing numerous clusters of white flowers. It is a native of the mountains of Japan, in the island of Nippon, up to an elevation of 3000 ft. above the sea. I am not aware that it has yet been introduced into European gardens.

2. **The Changing Hydrangea** (H. virens, *Siebold*, "Flora Japonica," t. 60).—This is a very remarkable and elegant shrub, varying in height from 2 ft. to 6 ft., according to the situation in which it grows. The branches are straight, slender, and polished, bearing small, thin, lanceolate, obscurely, or somewhat deeply-toothed leaves, 2 in. to 3 in. long, yellowish-green above, and pale beneath. On the short lateral branchlets of these slender branches the small clusters of flowers are borne, some or all of which are sterile, and have three enlarged, unequal sepals of a slightly greenish-yellow colour. Altogether this is an extremely ornamental little shrub, and it is somewhat surprising that it has not been introduced, especially as it is very common in the neighbourhood of Nagasaki, in Japan.

3. **Fortune's Hydrangea** (H. chinensis, *Maximowicz*).—Near the last, but of more robust habit, with leaves 3 in. to 5 in. long, and with cymes of flowers and sterile flowers both much larger. It differs from H. virens in the leaves being green on both sides, and in the enlarged sepals being nearly equal in size, much thicker, in fact almost fleshy in substance, and remaining on the branches until the fruit of the fertile flowers is ripe. This species was collected by Mr. Fortune in N. China, but whether he brought living specimens of it to Europe I have not been able to ascertain. Oldham and others have also collected it in the north-east part of the Island of Formosa.

4. **The Plumed Hydrangea** (H. paniculata, *Siebold*).—An exceedingly variable shrub or small tree; but all of the varieties are readily distinguished from those of H. Hortensia, inasmuch as the inflorescence is conical or cylindrical in outline, not flat-topped, or hemispherical as in the latter. According to Maximowicz, this is the only species of the Japanese Hydrangeas which becomes a tree. It grows as much as 25 ft. high, with a dense, rounded head and a straight trunk, 6 in. in diameter, and destitute of branches to about 5 ft. above the ground. But it more commonly forms a shrub a few feet high, bearing enormous panicles of flower, often considerably exceeding that represented in the figure given with this. The variations are not alone in the size of the plant itself, but likewise in the size and shape of the leaves, which are sometimes 5 in. or 6 in. long and proportionately broad, and in the size and colour of the flowers, as well as the proportions of sterile and fertile flowers. With the exception of H. Hortensia, it is the commonest species in Japan, growing throughout that country both in the mountains and the plains, being more abundant in the northern parts. It is also commonly cultivated by the Japanese. The principal forms and varieties of H. paniculata may be arranged thus:—

(a) H. PANICULATA TYPICA.—This differs mainly from the variety grandiflora in having only one sterile flower on each main branch of the inflorescence, and in these sterile flowers being smaller than those of grandiflora. The flowers are either white or pink. Probably not in cultivation.

(b) H. PANICULATA FLORIBUNDA (*Regel*, "Gartenflora," 1867, t. 530).—Scarcely different from the preceding, except that there are from two to four sterile flowers on each main branch of the inflorescence, and these are about 1 in. across. The variety figured on the plate quoted above has white flowers, disposed in a somewhat loose panicle. It was introduced into the St. Petersburg Botanic Gardens by Maximowicz, who purchased it from a Japanese nurseryman.

(c) H. PANICULATA GRANDIFLORA.—There are two varieties of this, namely: H. roseo-alba, as represented in the accompanying plate; and H. alba, a pure white-flowered variety, with enormous panicles of sterile flowers. The latter variety is figured in the "Flore des Serres," t. 1665-6, and is there represented as having panicles 9 in. high by more than 6 in. broad at the base, but doubtless high culture would account for this difference in size, for we know what it will do for the varieties of H. Hortensia. Both of these varieties of H. grandiflora were introduced from Japanese gardens by the late Dr. Von Siebold.

(d) H. PANICULATA MINOR.—Maximowicz describes this as differing principally in the much smaller size of its parts, and in its raggedly-toothed leaves. It does not appear to be in cultivation.

5. **Bracteate Hydrangea** (H. involucrata, *Siebold*, "Flora Japonica," t. 63 and 64).—An under shrub, according to Siebold, with herbaceous stems, and very large oval, oblong, or nearly circular, double-toothed, membranous leaves, sometimes nearly 1 ft. long by 6 in. to 9 in. broad. Oldham, however, describes it as a shrub 10 ft. high, growing in very moist places on hill-sides. The leaves when young are covered on the under surface with a dense, white tomentum, and the inflorescence is nearly flat-topped or rounded, as in H. Hortensia, not pyramidal or conical. But a character by which it is easily distinguished is the presence of a number of large, leafy bracts at the base of the inflorescence, where the branches are given off, which, however, fall away very early as the inflorescence grows out. The typical variety has only a few sterile flowers on the circumference of the inflorescence, but there are several very attractive varieties cultivated in Japan. One was introduced some years ago and cultivated on the continent, but I am not sure that it has ever reached this country. It was figured in the "Flore des Serres," t. 187, and has large, double, rose-pink flowers. The same variety is also figured in the "Flora Japonica," t. 64, and Siebold and Zuccarini state that there are double lilac, flesh-coloured, and yellow varieties, so it will be seen that there are still many handsome forms of this genus worth introducing.

6. **Tatarinow's Hydrangea** (H. pubescens, *Decaisne*, "Flore des Serres," t. 378-9).—This is a shrubby species or variety, (for Maximowicz unites it with Wallich's H. vestita, an Indian species inhabiting the temperate regions of Himalaya, at an altitude of 6,000 to 10,000 feet), which comes near the last, but the leaves are hairy only on the under surface, and the form of the inflorescence is very different. In the figure quoted the long leaf-stalks and midrib are represented as being of a crimson red. In shape and size the leaves resemble the common variety of H. Hortensia, but the inflorescence is very singular. It is only slightly branched, and several of the main branches are very long and recurved, and bear one or two sterile flowers at their extremity, all the others being fertile. The flowers are white, veined with green. A native of the mountains of north China to the west of Peking. By whom introduced I have seen no record, but it was probably among the numerous species brought over by Dr. Siebold. It is stated that it is perfectly hardy.

7. **Common Hydrangea** (H. Hortensia, *De Candolle*).—This species was the first of the Eastern or Asiatic species introduced into this country, but there were then already two North American species in cultivation here. But whilst the latter still remain unknown, the former was years ago an inmate of many a cottage garden, even in remote villages. Like H. paniculata it is a very variable plant, though until within the last twenty years or so, only two or three varieties were cultivated in Europe. The first coloured figure in an English publication taken from a living plant, is in Sir Edward Smith's "Icones Pictæ Plantarum Rariorum" (1790-1793), which represents a somewhat starved specimen of the familiar variety with pink flowers, all of which are sterile. Smith says it was introduced into Kew gardens in 1790, by Sir Joseph Banks, but Aiton ("Hortus Kewensis") gives the date as 1788: at that period it bore the name of Chinese Guelder Rose. The next figure is in the "Botanical Magazine" t. 438 (1799), and this is a very fair picture of the rose-red variety, in which all the flowers are barren. In the text accompanying this plate, it is stated that it was imported by Mr. Slater, with whom it is said to have first flowered in this country about the same time as Sir Joseph Banks introduced it, according to the writer there; it was then (1799) already so common as to render a description superfluous, and it occasionally produced blue flowers. From time to time, and especially in recent years, other forms have been introduced, and described and figured, some of them as distinct species. Dr. Maximowicz, who has had opportunities of studying them both in European and Japanese gardens, and also in a wild state, arranges the following forms under H. Hortensia.

(a) H. HORTENSIA ACUMINATA (*Siebold*, "Flora Japonica," t. 56).—A branching or much branched shrub, 2 ft. to 5 ft. high; leaves slightly pilose on both surfaces and bearded in the axils of the veins, usually narrow and tapering into a long point; flowers blue, barren

es with elliptical sepals. It sports according to locality, &c., and Maximowicz enumerates four such sports, viz. :—(1) In open places and in a rich soil it is stouter and less branched, with erect, thick branches, large broad, firm leaves, and larger flowers with somewhat fleshy sepals; under cultivation it becomes more showy, passing into H. Belzonii. (2) In woods and on the shady banks of rivers it grows taller with slender, weak, flexible stems, long-stalked, taper-pointed leaves, and much smaller barren flowers, having usually three thin sepals. (3) In a very fertile soil, a stout plant with toothed sepals in the barren flowers, which are commonly of a blue colour. This is the true H. Buergeri of Siebold and Zuccarini's "Flora Japonica," t. 57 (in part), and the H. japonica cœrulescens of Regel, in part. Sometimes it produces white or rose-coloured flowers, and then it is the H. roseo-alba, as figured in the "Flore des Serres," t. 1649–50. The first figure represents wholly white flowers, and in the second the sterile ones are of a deep rose-red, whilst the fertile ones are white. These variations are all exceedingly beautiful, but perhaps not quite constant. (4) Flowers nearly all sterile, almost always blue, rarely reddish; sepals entire or toothed.

(b) H. Hortensia japonica.—This is the H. japonica of Siebold and Zuccarini's "Flora Japonica," t. 53; and the H. Japonica macrosepala of Regel's "Gartenflora," t. 520. It is exactly like the variety *a*, save that the flowers are tinged with red, and the sepals of the barren flowers are broadly ovate to cordate-ovate, and elegantly toothed. Maximowicz does not appear to have seen the figure of H. roseo-alba quoted above, or he would probably have referred to this.

(c) H. Hortensia Belzonii (syn. H. japonica cœrulea. Bot. Mag. t. 4253.)—A short, stout plant, with exceedingly beautiful flowers, the inner sterile ones being of an indigo blue, and the enlarged sterile ones white, or only slightly tinged with blue, and having entire or scarcely-toothed sepals. There is a sport of this in which the leaves are elegantly variegated with white. This was raised by Messrs. Rovelli, of Pallanza, and there is an admirable figure of it in the "Flore des Serres," t. 696.

(d) H. Hortensia Otaksa.—This differs from variety *C* in nearly all the flowers being sterile and enlarged; it also comes very near sport four of variety *a*, into which, indeed, it appears to degenerate if neglected in cultivation. A very handsome variety with rich, dark green leaves nearly as broad as long, and very large hemispherical heads of pale pink or flesh-coloured flowers.

(e) H. Hortensia communis.—This is the old variety with rose-pink flowers, commonly cultivated in European gardens. It differs from the last in being perfectly glabrous in its longer, less rounded leaves, and in its deeper-coloured flowers.

(f) H. Hortensia Azisai (*Siebold and Zuccarini*, "Flora Japonica," t. 51).—This is not in cultivation, but it differs remarkably from all of the preceding varieties in the sterile flowers, which have a very long, slender, calyx tube.

(g) H. Hortensia stellata (*Siebold and Zuccarini*, "Flora Japonica," t. 59; Regel's "Gartenflora," t. 521).—The chief character of this variety is in the flowers, which are all sterile and double. The variety in cultivation has pink flowers, but they are described as being either pale blue or rose, finally changing to a greenish colour, and distinctly net-veined.

8. Thunberg's Hydrangea (H. Thunbergi, *Siebold and Zuccarini*, "Flora Japonica," t. 111).—A small shrub with slender branches, small, ovate-oblong leaves, and small cymes of flowers. A few only of the outermost ones are sterile, and these are not more than ½ in. in diameter. According to the "Gardeners' Chronicle" (1870, p. 1698), Messrs. Cripps, of Tunbridge Wells, flowered this species in June, 1870. They describe it as perfectly hardy, though not so showy as some of the varieties of H. paniculata and H. Hortensia. The sterile flowers are of a delicate Peach-blossom colour. It is a native of the mountains of Sikok and Nippon, Japan.

9. Climbing Hydrangea (H. scandens, *Maximowicz*).—A tall, climbing, or trailing shrub with small, cordate, or ovate leaves borne on relatively very long, slender stalks. The inflorescence is loose, the lower branches especially being very long and flexible. Maximowicz distinguishes two varieties, viz. :—(1) H. petiolaris, with the leaves ovate or elliptical, occasionally somewhat cordate at the base; sepals of the barren flowers sometimes notched, either entire, or remarkably toothed. It is figured in the "Flora Japonica," t. 54. (2) H. cordifolia; "Flora Japonica," t. 59, fig. 2, and H. bracteata of the same work, t. 92. In this the leaves are distinctly cordate, and the entire or toothed sepals are very rarely notched. A very hardy species, found in the mountains of Japan, and in the southern parts of the island of Lachalin. It grows in shady woods on Cryptomeria, clothing the trunks up to a great height. It has not yet been introduced.

2. Species, Natives of North America.

10. The Common North American Hydrangea (H. arborescens, Bot. Mag., t. 437).—A shrub, 4 ft. to 8 ft. high, with ovate or cordate leaves and terminal cymes of small, inconspicuous, fragrant flowers, usually all fertile, but sometimes a few, more rarely all, of them are sterile and enlarged. It is not a very ornamental shrub, and in England seldom grows more than 4 ft. high; but it is mentioned here on account of its being the first of the genus cultivated in this country. It was introduced in 1736 by P. Collinson; and Miller gives a coloured plate of it in his "Figures of the Most Beautiful, &c., Plants"—one of the first works, it may be mentioned, that was published containing coloured plates of plants cultivated in Britain. H. cordata, figured in Watson's "Dendrologia Britannica," is the same species. It is the hardiest of the North American species, growing as far north as the northern parts of Pennsylvania.

11. Silver-leaved Hydrangea (H. nivea, *Watson*, "Dendrologia Britannica," t. 43; H. radiata).—A shrub near the last, except that the leaves are clothed on the under side with a short dense wool. A native of Carolina, introduced in 1786, hardy only in the milder parts of this country. Like the last, it is not a very ornamental shrub.

12. Oak-leaved Hydrangea (H. quercifolia, Bot. Mag., t. 975).—This is a very distinct and, at the same time, an ornamental species; it is a shrub growing a few feet high, with large, hairy, palmately-lobed leaves, resembling more those of a Plane than those of an Oak. The flowers are greenish-white changing to purple, and borne in terminal panicles, a few of the outer ones being barren and enlarged. A native of Florida, and scarcely hardy in any part of this country. It was introduced in 1803. Bartram, who first described this species, says that it has crimson flowers.

3. Species, Native of India.

13. Blue-stamened Hydrangea (H. Cyanema, "Bot. Mag., t. 5038).—A very pretty greenhouse species, introduced some years ago by Mr. Nuttall through Mr. Booth. It is a very hairy, subscandent shrub, with large, ovate, coarsely-toothed leaves, and a large, corymbose inflorescence. The barren flowers, which are interspersed with the others, are white, veined with red, and the small petals stamens of the fertile flowers are blue. Judging from the figure quoted above, this is a very ornamental shrub. It is a native of the temperate regions of the Himalaya Mountains, where several other species grow, one of which, H. heteromalla (H. vestita), was formerly cultivated in Britain.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Solanum capsicastrum and S. pseudo-capsicum that were planted out-of-doors in spring in a warm, sunny position, although not so forward as they would have been had the weather been warm earlier, should now be lifted and potted, as it is necessary to get them established before the season gets too far advanced, or the berries will not colour so well, neither will the plants retain their foliage satisfactorily until the spring. Except in the case of large plants above the size that these Solanums can be grown to propagated from cuttings or seeds in a single season, 6-in. pots will answer well, for if the roots can be got into them without much pressure they are sufficiently large. A soil in which Cucumbers have been grown will answer the purpose just as well as new loam; it will require sand enough added to it to keep it from getting impervious to the liberal quantities of water which these Solanums need; put 1½ in. of crocks in the bottom of each pot with a little half-decomposed leaf-mould on the top; pot them moderately firm, and do not fill the pots too full. The day before lifting the plants they must be well soaked with water, which will prevent their roots from being so much broken in removal; take them up with a fork carefully. It will be necessary to shake a good deal of the soil from them to admit of their going into pots of the size just named; as soon as they are potted they must be thoroughly soaked so as to make the soil quite moist; this advice may appear very different from that which I generally prescribe for most plants, but the nature of these Solanums is such that they will bear it with impunity; and if not done the leaves will flag, when they are certain to lose the deep green colour that adds so much to their appearance, to secure which and a greater quantity of berries, they are recommended to be thus planted out in preference to growing them in pots through the summer. If a pit or frame can be spared so as to keep them close with little air admitted and shaded from the sun until they have got established, that will be a suitable place for them. If they cannot be so treated, they must be placed at the north side of a wall or

close hedge, so as to prevent the sun from shining upon them for three weeks, by which time they will have made new roots sufficient to support them during this time. Sprinkle with water overhead every evening whilst the weather is dry. Examine closely in order to see that no aphides infest the leaves, for if only a few of these exist they will increase apace when taken indoors. If it be desirable that a portion of the stock should have their berries coloured early they ought to be placed in a little heat; about 50° in the night will soon give them their bright orange tint. The remainder under ordinary greenhouse warmth will form a succession. If managed in this way these most useful decorative plants can be had in better condition than by any other method. Nothing will bear confinement in a room better, or will be more suitable for the purpose when the berries are ripe.

Herbaceous Calceolarias should be pricked out in seed-pans as soon as they are large enough to handle; there are many good "strains" of these plants now in existence that are not nearly so delicate in constitution as those with more finely-formed flowers that were grown some years ago; those to which I allude make plenty of large leaves, are of a dwarf, compact habit, producing profuse heads of bloom, and are very desirable for amateurs to grow; the principal points needing attention are to keep them scrupulously free from aphides, and to feed liberally with manure-water in the spring when they are making active growth; they delight in rich open material from their first stage onwards. For this first pricking out sift the soil, and add to it one-fourth of fully decomposed manure and leaf-mould in equal parts and a sixth of sand; the pans used may be from 8 in. to 12 in. in diameter, with 1 in. of crocks in the bottom, and a little fibrous material over to keep the loose soil out of the drainage; on this put the prepared soil, pressing it moderately, but not too close, filling up the pans to within 1 in. of the top; put in the plants about 1½ in. apart, and sprinkle overhead when each pan is filled. Calceolarias are moisture-loving plants, and must never be allowed to get dry at the roots or be subjected to an over-dry atmosphere. Keep them near the roof of the pit or house in which they are placed during the autumn; when they require more room they must be potted off singly.

Vines in Mixed Houses.—In houses in which pot plants and Vines are grown with no more heat than the sun affords, the Grapes will be ripening, and should have more air given them. In the colder, more northern parts of the kingdom every means must be taken to get the wood thoroughly matured; where means for applying a little fire-heat exist this should be used; where it does not, the house should be shut close up every afternoon two hours before the sun is off the glass. If the thermometer run up to 90°, or a few degrees higher, it will do no harm, but the reverse; later in the evening 1 in. or 2 in. of air may be given, leaving it on all night.

Plant-houses and Pits should receive a thorough cleaning out, washing the stages, glass, and woodwork; the sash-bars and rafters should be well scrubbed with soap and water, using a brush to the glass to remove all the dirt that has accumulated. By this means the plants receive all the light available through the autumn and winter, which is of the greatest benefit to them. The inside walls should be whitewashed; this is particularly necessary for lean-to houses, where the whitened surface will reflect the light to the plants; the glass should also be washed outside. In the neighbourhood of towns, where soot is always accumulating on the glass, this, if not regularly removed, intercepts light to an extent that seriously interferes with the well-being of the plants.

Peach Borders.—Should there be a longer continuance of the extreme dry weather which we have experienced, it will be necessary to apply water freely to outside Peach borders much later than they usually require it; if this be not done, the leaves will suffer and fall off sooner than they ought to do, which in all cases has a prejudicial effect upon the strength of the trees, and on their bearing another year. The application of water to these trees will be most needed where any kind of vegetable crop is grown on the border, and which from the moisture it extracts from the soil renders the trees in a worse condition as to root moisture than where the border is uncropped; do not confine the application of water, as is too frequently done, merely to a few feet round the stem of the trees, where it is really least wanted, but apply it over the whole extent of the border occupied by the roots; keep all the shoots required for next year's bearing laid in close to the wall, a position in which they will get ripened much sooner than if left hanging loose; this is most necessary in late localities where there is a difficulty in getting the growth matured.

Bedding Plants.—Cuttings may still be put in of any bedding plants, of which there is an insufficiency, including Ageratums, Heliotropes, Verbenas, Lobelias, Petunias, and any others that are grown of a similar character. Amateurs will find it much better to have more prepared in the autumn than they are likely to require as more or less generally go off through the winter. Pelargoniums, not yet put in, may be inserted closer in the pots than earlier in the season, as they will not make so much growth. They will generally be found less liable to damp off during the winter in pots than in boxes.

Chrysanthemums that are planted out in the open ground with a view to layering the shoots and afterwards transferring them to pots for blooming, should now be layered; when the soil of the site in which the plants are growing is of a loose sandy character, they may be layered in it without any addition, but when it is of a strong adhesive description, it will be necessary to use some purposely prepared; such as has been employed in Cucumber or Melon beds will do, provided it has enough sand added to it, and a little rotten manure or leaf-mould sifted; this should be laid in hills in the manner in which Carnations are treated for layering. The shoots must be bent down and the leaves stripped off at the place where they are intended to be layered, which may be a little below where the flowering growths branch out; tongue the shoots, that is, split them longitudinally upwards for about 2 in., passing the knife halfway through them, and then bury the tongued part for about 8 in. of its length in a little hill of soil, already described, securing it with hooked pegs strong enough to keep it firm in its place, let the soil be regularly watered, and in a few weeks the shoots so treated will form a mass of roots, after which they may be severed just below where they are layered, and potted. It is necessary, as has been stated, to have the soil of a light character, or the roots will get broken when taken up, in which case the blooms will suffer; by this method a very large quantity of flowers can be obtained from pots of a small size.

Kitchen Garden.—More Lettuce and Endive should now be planted out, and if the weather be such as to require it, give water at the same time. Celery should be regularly soaked before it gets too dry, as when allowed to flag this has a tendency to cause it to "bolt" early, and always makes it indifferent in quality. In the case of that about to be earthed up, enough should be given to thoroughly moisten the whole of the soil as far as the roots extend. A little more Endive may now be sown, where this is required, for salad towards the spring. All the second early Potatoes should now be taken up and stored away dry. The best way to secure this necessary condition is to choose a dry time for taking them up, and to expose them as they are got out of the ground on the surface for a few hours. Where any have made a second growth, or what is understood as supertuberation, the quality for culinary purposes will be much injured, as it always makes them soapy; but where a limited number of tubers only are affected, they might be put away for seed, for which purpose they will not be so much worse if treated through the winter, as previously recommended for those intended for planting.

Orchids.

No class of Orchids is more showy or better worth growing than the Cattleyas; most of them are easily managed, and yet they frequently give more trouble to the cultivator than any other class, for, when once a Cattleya gets into bad condition, it is difficult to restore it to health. One of the causes why Cattleyas fail is their being given too much water and kept in too moist an atmosphere from the present time throughout the autumn and winter. Many of these plants are now growing, and will grow for some time to come, but Cattleyas do not like to be kept wet at any time. They are evergreen plants, and should be given a limited supply of water all the year round, and but little more during the growing than during the resting season. They should never be allowed to get very dry nor very wet; in the former case, they are injured by the plants shrivelling, and in the latter, by the rotting of the roots. But even a more important matter in the case of these plants is that they should be kept in an airy, well-ventilated house; no matter to what treatment they are subjected, if they be not freely supplied with air, they will not thrive. Another reason why many Cattleyas are apt to be troublesome is, because they are mostly grown together and treated all alike; but if we reflect a little, we shall see that for their better management they should be divided into at least three sections; of course they may be kept in the same house, but the cultivator should treat each section by itself. The first section requiring the most heat and moisture comprises the Rio Negro and Costa Rica varieties, C. Dowiana, C. superba, C. Eldorado, C. splendens, C. Skinneri, &c. These varieties will bear 10° more heat than the other Cattleyas during the growing season, accompanied by a moist atmosphere; and care should also be taken that they are not kept in too low a temperature during the resting season. It is from neglect of these matters that this, perhaps the most difficult class of Cattleyas to manage, frequently does not succeed.

The next section comprises the bulk of the genus, the Brazilian Cattleyas, including C. crispa, C. bulbosa, C. Leopoldi, C. Aclandiæ, C. amethystoglossa, C. labiata, C. Warneri, C. marginata, &c., and their varieties and the varieties of C. Mossiæ from La Guayra; and these varieties, constituting as they do by far the most numerous section, should be treated and managed as Cattleyas usually are, and the other varieties should be treated as exceptions to the rule. With Cattleyas of this class overwatering and imperfect ventilation are more frequently the cause of disaster than anything else; syringing is also productive of much mischief; it cannot be done when the plants are growing without the water getting into the young growth, where it is sure to be injurious, and when the plants are at rest, for obvious reasons it cannot fail to be hurtful to them; it is far better to rely on the careful adjustment of the temperature, and to keep the air slightly moist by putting water on the stages whenever it may be necessary. When Cattleyas have been standing flat on stages and have not thriven well, they are often greatly benefited by being raised on inverted pots, so as to bring them nearer to the light and allow the air to play freely around them. The third section consists of the numerous varieties of Cattleya Trianæ or Warscewiczi, &c., from New Granada; these will stand more cold than the others, and should be grown at the coolest end of the house. A rather more liberal supply of water may be given them, but in other respects the same general treatment will do. If Cattleyas be looked after in this way, they will be found easier to manage than when treated alike. Of course there is great difficulty in contending against our long dull seasons, to which these plants are unaccustomed in their native habitats, but the chief cause of failure is lack of pure air, which, under proper treatment, should have been supplied.—James O'Brien.

Flower Garden.

The present month is to the flower gardener one of the busiest of the whole year, as much of next season's success will depend upon the immediate preparations made in getting up a good stock of the various kinds of plants used for bedding purposes. Pelargoniums will be the first to require attention, and cuttings of these favourite plants should be got in at once, or there will not be time for them to form roots before winter sets in. All the variegated kinds take longer to strike than the green-leaved varieties, and should therefore be got out of hand first. In selecting the cuttings, make choice of those that are firm and short-jointed, as they may be depended on to root, and always make the best plants. My practice is to put all the bedding Pelargoniums into 4-in. pots, three in each, in which they winter without any further disturbance, and when the time comes round for potting them off singly in the spring, they will be found of a large size. This mode of culture will prove much superior to that of inserting them in beds in the open borders from which they have to be taken up in October and potted singly, whereby they receive such a check by the breakage of so many of their roots, that they are a long time in getting over it, and many fail altogether. Choose a well-sheltered sunny position for them, and give an occasional sprinkling overhead in the afternoons of clear bright days, which will keep their leaves fresh, and so aid the formation of roots. Although Pelargoniums strike best in the open air, it is advisable to place them in old pits or frames, where they can have the lights placed over them in the event of wet weather, as at this late season any drenching rains would be fatal to success. Verbenas, Lobelias, Ageratums, Alternantheras, Heliotropes, the beautiful little Mesembryanthemum cordifolium variegatum, and many others of similar habit, do much the best propagated in the spring; but in order to insure plenty of stock plants for this purpose, any in store pots should now be potted off, or a batch of cuttings likely to afford a sufficient supply should be got in at once. These will now require a gentle, moist heat and an occasional bedewing overhead, so as to keep them fresh and prevent them from flagging, for when that takes place with such small-stemmed subjects as the above, they seldom root in a satisfactory manner afterwards. The great heat that prevailed during July and August has been most trying for many kinds of bedding plants, especially such as Violas, Calceolarias, Lobelias, and similar moisture-loving subjects; while succulents and fine-foliaged plants now becoming so fashionable have thriven amazingly, thus showing how much better adapted they are for general decorative purposes than many of those formerly in use; for be the weather wet or dry, they still retain their freshness and beauty, which endures long after many of the flowering plants have discontinued blooming. As most beds are now at their best, or show what is faulty in their arrangement, the present is a good time for visiting neighbouring gardens or the public parks, now so well managed, in order to pick up fresh ideas that may be turned to account before the propagating season is over. By so doing much disappointment and delay is saved, as the adaptability of any particular plant for certain special purposes can be seen at a glance, and impressions noted respecting the various combinations of colour, not with the view of repeating the same, but that mistakes and failures in the future may be avoided. The most perfect order and neatness should prevail, so as to render this department of the garden as enjoyable as possible; and with this view it will be necessary to go frequently over the beds and borders to pick off any dead or decaying leaves or flowers and to stop any straggling shoots, so as to maintain the utmost exactitude in keeping the outlines regular and distinct, without which carpet beds lose much of their interest and general effect.

Wigandias, Ricinus, Cannas, Maize, and other fine-foliaged plants of gross-feeding habits, should be well supplied with manure-water, and in sufficient quantities to soak the whole of the soil, as their principal feeding roots penetrate far down and derive little or no benefit from mere surface-wetting. Autumnal gales may now be expected, and in order to prevent injury occurring to such plants as the above, they should at once be securely staked and tied, or the force of wind with the hold it has on such a mass of leaf surface will soon commit sad havoc amongst them.

Hollyhocks, Gladiolus, Dahlias, and other tall-growing plants, must be protected in the same way. The generality of herbaceous plants have been very poor this season, owing to the great heat and absence of rain; Phloxes especially have suffered from this cause, so that there will be no chance of obtaining cuttings for propagating purposes, owing to the dry, woody nature of their stems and the absence of young growth, and therefore where an increase is desired it should be effected by division which may now be done. After the rest and thorough ripening most border plants have had, many of them may be expected to bloom freely a second time, and any that show this tendency should be assisted with manure-water, as flowers of such things as Delphiniums, &c., at this season have a double value.—J. Sheppard, *Woolverstone Park.*

Kitchen Garden.

Spring-sown Onions should now be harvested, and the ground cropped again with Cabbages, Coleworts, &c. No digging will be necessary, but the ground should be well cleaned by hoeing, then deep drills should be drawn, and the plants dibbled in 1 ft. apart, which will allow of alternate plants being drawn for use before they injure those intended for the permanent crop. Potatoes should also be got off the ground as quickly as possible now. All early kinds, without exception, have turned out well, and one's predilections in favour of confining oneself to early sorts only have been strengthened, for late sorts have been, and are now growing out badly, and if left the crop will be worthless. Disease has also set in, and the rains we are now having will favour its spreading, therefore lift them at once, ripe or unripe. In many gardens ground is so valuable that it has to be doubly cropped, hence it is a common practice to plant Broccoli, &c., between the rows of Potatoes—a most reprehensible practice, and one which should be avoided when possible. Where such cropping has been done, now that the Potatoes are dug, the Broccoli should be earthed up, for the haulm of the Potatoes having prevented a sturdy growth, the wind and a few hot days would otherwise soon injure them. As ground becomes vacant, other kinds of winter greens may still be planted, such as Kales, Coleworts, &c., but any ground that it is desired to expose fully to the frosts of winter should remain vacant, and be roughly dug or ridged up as soon as opportunity offers. It is not yet too late to sow Turnips, and those recently sown should be thinned out; the ravages of the Turnip fly have been unusually severe this dry season, but later crops promise better, and those sown now may escape altogether. On warm situations Spinach may still be sown with a fair prospect of its doing well; that sown a week or two ago may be thinned out to 9 in. or 12 in. asunder, for nothing is gained by leaving the plants thicker together than this. Cauliflowers that were sown in the middle of last month will now be ready to prick out, and those intended for early use next spring, and which are to be protected during the winter by hand-lights, ought to be pricked out in them at once; double or even treble the number of plants intended to stand may be planted in them and drawn out as growth progresses, and transplanted in other favourable positions as soon as the severity of winter is past; of course, the covers of the hand-lights will not be required for use till there is danger of injury from frost; a batch may also be pricked out at the bottom of a south wall and left to stand the winter in that position. In this district these invariably turn out the best plants, and furnish the finest Cauliflowers of the whole year. Lettuces and Endive should be thinned out during showery weather, and if necessary the thinnings may be planted, though as a rule it is best to sow where the plants are to stand, as in that case their growth is much more satisfactory. Small saladings will shortly have to be transferred to the indoor department, and at this season, when

salads are more than usually in request, care should be taken that no break occurs in the supply. Tie up Endive on dry days to blanch it, and if necessary Lettuce also, but now that there are so many kinds of Lettuces of compact growth that blanch without tying, it is not worth while to grow others.—W. Wildsmith, *Heckfield.*

BARREN TUBEROSES.

Tubers of these lovely sweet-scented plants do not always prove satisfactory. They are generally potted in light, rich soil, in autumn, say in August, after which the pots are plunged in a pit or frame until the tubers throw out roots, when they are removed into heat, and kept there until they flower. Like the bulbs of the Hyacinth, the tubers of this plant bloom only once satisfactorily, after which they should be thrown away, as fully ripened tubers are imported annually, and can be obtained at a moderate price. There are both single and double varieties of Tuberoses, and one variety, called The Pearl, is very dwarf, rarely exceeding 18 in. in height, and it blooms very freely. Our object now is, however, not so much to give cultural instruction or describe varieties, as to point out a disease to which the Tuberose is liable, viz., going black in the centre, especially if exposed to cold or wet; and whenever this happens, the tubers never bloom. Our engravings show a sound

Sound Tuber.

Unsound Tuber.

healthy tuber, in which the incipient flower-spike is visible, and also a tuber in which it is destroyed by cold and damp; in the latter case, as will be seen, the young flower-spike has rotted away, leaving a black cavity. Whenever a consignment of Tuberoses is received, it is advisable to pick out a few of the tubers promiscuously, and cut them through longitudinally, so as to make sure that the sample is a sound one. This is especially necessary in the case of tubers which have been kept over the winter for planting in the spring, in order to afford a succession of bloom. Tuberoses, when well grown and flowered, are greatly appreciated by everybody; and if strong sound tubers be obtained few flowers are more easily cultivated, their value as cut flowers for button-hole and other bouquets being enhanced by the successional way in which the flowers expand from the base of the spikes upwards. With sound tubers a light rich soil and plenty of light, heat, and moisture, success, as regards their culture, is almost certain. B.

Effect of Drought on the Distribution of Plants.—This forms the subject of an interesting note communicated by M. Eugene Robert to the Academy of Sciences. In the mountain woods in some parts of France, the long drought in the early part of last year had a very detrimental effect on the Mosses and Lichens, which everywhere showed large patches of decay. The result was a conspicuous spreading of other forms of vegetation, such as Grasses, Thymes, Sages, and leguminose plants.

GARDEN RECEIPTS.

Birds and Seeds.

Seeds of all kinds great and small are subject to the attacks of birds, more particularly in small gardens. In the market gardens, where Radishes are sown by the acre, a boy is regularly employed to keep off these marauders. In the small breadth required in a private garden it would not pay to employ labour in that way, yet if nothing be done, a very few finches would, in a single day, destroy a crop. The best remedy is to dress all seeds with red lead. The dressing, to be effectual, must be done thoroughly. The best method is to place in a large teasaucer as much seed as it is the intention to sow, on which sprinkle a very few drops of water, for if they be made too wet, the seeds and the lead will stick together in a mass; then take a teaspoonful of dry, powdered red lead, and stir the whole thoroughly until all the seed is well coated with lead; let it stand for a couple of hours to dry before sowing—this is necessary, or the lead will wash off with the rain; whilst, if laid on with the right amount of moisture, and well dried, it will adhere to the outer covering of the seed, even when it appears above ground. With a little practice in the preparation of the various seeds that thus fall a prey to birds, the amateur will soon be able to judge when he has hit upon the right degree of moisture required before applying the lead, and upon which depends the perfect preparation. Half a pound of red lead will last a season, and the trouble is nothing when compared with the blank crops. Paraffin oil has been also recommended. An experiment lately made for the purpose of testing its power to keep birds from eating seeds when sown, proved so far successful that, of a handful of Radish seed soaked in the oil for fifteen minutes and then sown, not a seed appeared to have been taken, for all came up freely, and no protection was afforded, although birds were very abundant. Petroleum or benzoline would of course answer the same purpose.

Bleeding in Vines.

This seldom occurs, except in the case of late Vines, on which the Grapes are allowed to hang until the sap begins to flow, and which consequently bleed when pruned. The most effectual remedy, therefore, is to cut the Grapes as soon as the wood is ripe and put the stalks of the bunches in bottles of charcoal water, in which they will keep as soundly and well as if left on the Vines. The latter can then be pruned while in a dormant state, when bleeding will, as a matter of course, be prevented. When, however, bleeding does occur, the following remedies will be found to be effectual:—

Collodion.—One of the best styptics is collodion, an invaluable remedy for stopping the bleeding of Vines, or for coating the bases of cuttings which are extremely liable to damp off. It can be applied with a feather or small brush. In some extreme cases two or three coats will be needed, in which case allow the collodion to form a film before applying another coat. Pharmaceutical collodion is better than photographic for this purpose, the film being thicker and firmer.

Hot iron.—Apply a hot iron to the bare surface until it is charred, and then rub into the charred surface a paste made of newly-burnt lime and grease.

Knight's Plaister.—This is considered a very effectual application, and is thus made:—One-fourth of calcined oyster-shells or ordinary quicklime beaten to fine powder in a mortar, and three-fourths of cheese, worked together until they form a sort of paste. This mixture is to be forced into the pores of the wood, where bleeding takes place, by means of the thumb and finger. A second application is sometimes necessary.

Tar.—It often happens that, either by intention as in pruning, or by accident, other trees besides the Vine are wounded in various ways. A common practice is to cover large wounds with coal-tar, but this is objected to by some as injurious to the tree. Experiments made in the orchards and gardens of the Pomological Institute, at Reutlingen, in Germany, go to show, however, that its use in covering large wounds is not injurious; but that, on the contrary, a callus readily forms under the tar on the edges of the wound, and that the wounded part is thus protected from decay. There is, nevertheless, another objection, viz., if the tar be applied a little too thick, the sun melts it and it runs down on the bark of the

tree. This can be obviated by mixing and stirring, and thus incorporating with the tar about three or four times its weight of powdered slate, known as slate flour—the mixture being known as plastic slate, and used for roofing purposes. It is easily applied with an old knife or flat stick, and though it hardens on the surface, it remains soft and elastic underneath. The heat of the sun does not melt it, the coldest winter weather does not cause it to crack, neither does it peel off.

Tobacco Dust.—Mr. Baillie, of Beaufront Castle, Hexham, gives the preference to Tobacco dust. He says:—After pruning our early Vinery this winter a Muscat of Alexandria commenced bleeding profusely from more than one wound, owing to its proximity to a warm drain, through which pipes are led to a range of plant-houses. We tried various remedies for stopping the bleeding, but without effect until we used Pooley's Tobacco dust, which was rubbed well into the wounds, dusting them afterwards with the dry dust. The effect was almost instantaneous, the wounds being sufficiently dry in a few hours to receive a dressing of Thomson's Styptic. Many Vine-growers use Stockholm tar with a little ochre or umber to give it more substance.

Boiler Incrustations.

Ordinary boiler incrustations, resulting from the use of hard water, consist chiefly of carbonate and sulphate of lime, the former salt always being in excess. Carbonate of lime separates itself gradually from hard water when the temperature is raised to the boiling point, and in the course of time assumes a crystalline form. Hard crystalline masses or stone-like deposits are thus formed in steam boilers, which greatly interfere with the economical production of steam. The best plan of preventing the formation of boiler deposits is to soften the water by Clark's lime process, which is described below. The next best plan is to add to the water a solution of caustic soda; to allow the precipitate to settle, and to use the clear water for feeding the boiler; or if it be considered too much trouble to soften the water in this way, caustic soda dissolved in water may be put into the steam boiler. By this means the precipitation of the carbonate of lime, as well as the removal of the sulphate of lime is effected, and the small amount of lime which does fall down is far less crystalline than it is when no precipitating agent is employed. The formation of crystalline and hard incrustations in boilers may also be prevented to a great extent by placing in the boiler Potato peelings, spent tan, peat-mould, coarse sawdust, or chips of Oak wood and bark, or similar materials which act in a purely mechanical manner in preventing the agglomeration of crystalline particles of carbonate of lime into hard masses. Several compositions sold as preventives of boiler incrustations act mainly in a mechanical way, and others in part chemically and in part mechanically. A favourite composition sold under various names consists of a combination of crude tannic acid, produced from gum catechu or Oak bark, or other astringent raw materials with bone gelatine or glue. Crude tannic acid and caustic soda are likewise constituents of several fluids recommended as preventives of boiler deposits. The following is the principle of Dr. Clark's process:—Carbonate of lime is scarcely soluble in pure distilled water, a gallon being capable of holding only about 2 grains in solution. In river or spring water, however, carbonate of lime is held in solution by carbonic acid, or, in other words, exists as bicarbonate of lime. On boiling, the second equivalent of carbonic acid in the soluble bicarbonate is expelled, and neutral carbonate of lime precipitated. Caustic lime, when added to hard water in sufficient quantity, neutralises the carbonic acid, removes the solvent, and becoming at the same time carbonate of lime, is precipitated with that originally in solution. Clark's process is peculiarly well adapted to the softening of chalk springs, which owe their hardness almost entirely to carbonate and not to sulphate of lime, a constituent which cannot be removed by heating or by the lime process, and which renders water permanently hard. The composition of spring or well water from the chalk strata varies but little in different localities. ½ lb. of caustic lime made into milk in a pailful of water, may be thrown into the tank for every 400 gallons used in the boiler. When caustic soda is used, about 2 oz. or 3 oz. to every 100 gallons of water should be thrown into the boiler. An excess of caustic soda will not injure the boiler in any way. All depends, however, on the hardness of the water, which can only be ascertained by experiment.

Cabbage Grub.

In old soils all the Cabbage kind, Broccoli and Cauliflowers especially, have a tendency to form club roots, owing to the attacks of the Cabbage Grub or larva of the Curculio contractus, a small insect belonging to the beetle tribe. The damage it causes is often a serious matter for the gardener, as it nearly destroys whole crops, and makes very inconvenient gaps, especially in summer Cauliflowers. When the grubs first attack a crop there is nothing to indicate their presence until the plants begin to turn an unhealthy colour; then they flag in the sun, and in a few days the crop is lost. There is no variety of the Cabbage tribe quite free from this pest, although the different kinds of Winter Kale, as well as Red Cabbage, are less frequently affected than Cauliflowers and summer Cabbages.

Lime and Soot.—One of the best methods of preventing the inroads of Cabbage Grubs is to make each plant unpalatable to them. In the spring procure some newly-burnt lime, and lay it under cover until it becomes air-slaked. Then take an equal quantity of soot and mix it with the lime. In planting, the holes are made with the trowel in the usual way; each plant is dropped into its hole, an inch or so of the soil put over the roots, a good watering given first, then a moderate handful of the soot and lime mixture thrown in each hole, and the remaining soil filled in.

Soot and Garden Soil have also been recommended as a specific. Take equal parts of soot and fine garden soil, thoroughly mix them with water to the consistency of thin mortar, and dip the plants in the mixture up to the base of the leaves before planting. This is said to be a safe and never-failing preventive of clubbing.

Wood Ashes mixed with water and put into the holes after watering is also a favourite remedy in wood-burning districts. Some ashes should also be incorporated with the soil of the seed-bed, as well as strewed over the ground generally.

—— Another remedy is to dip the roots of the plants before putting them into the ground into a mixture of soot and water, with the addition of a little saltpetre. This should be made of the consistency of thick paint, using 1 lb. of saltpetre to each gallon of soot. Charcoal dust, spread ½ in. thick on the plot, and then just mixed with it by the point of the spade, will sometimes act as a preventive, and is always of some benefit. A dressing of lime from the gasworks, at the rate of twelve bushels to the acre, has also been found effectual.

In applying the above remedies great care must be taken not to put in the mixture first and water the plants afterwards, as this would have the effect of washing the stems clean and taking the mixture down into the soil away from where it is required, thus affording no protection to the plants.

Caterpillars.

Cabbage Caterpillar.—One of the best methods of diminishing the ravages of this pest is by destroying the chrysalis before it is transformed into the egg-laying, perfect butterfly. When preparing to enter the chrysalis state it leaves the plant on which it has so greedily fed, and seeks a safe retreat and a firm object to which it may attach itself by its silken moorings. The places of retreat most generally selected are the under surface of projecting copings and joints of garden walls, doorways, chinks or hollows in stone-work or the under surface of the gutter, beam, wall plate, slips, or other woodwork of Vineries or plant-houses. When the place is fixed upon the transformation commences, and the caterpillar becomes the apparently lifeless chrysalis, firmly fixed by a cord of silk to the surface it has selected for its resting-place. It is as well to employ a boy and stimulate his exertions by the promise of a few pence for every pint of chrysalis he collects from the garden and its surroundings; this will be found the best means of abating the caterpillar pest.

Bracken.—A writer in the "Belgique Horticole" having observed in the garden of a peasant that the Cabbages were covered with fronds of the common Bracken (Pteris aquilina),

inquired the reason, and was told by the owner that it was a certain and easy way to get rid of the Caterpillars. He made a trial of the remedy himself, and he states that in one hour after the Bracken fronds were laid on not a Caterpillar was to be seen. Elder leaves are said to be equally efficacious.

Hemp.—M. Ad. Sucy, in a letter to the "Revue Horticole," recommends the use of Hemp for the purpose of destroying caterpillars. He says:—Many years ago I saw an individual sowing broadcast a coarse grey powder on beds of Cabbages, which were almost devoured by legions of Caterpillars. On inquiry I found that this was nothing else than the refuse of beaten Hemp, and consisted of fragments of the dried and broken leaves, and particularly of the crushed seed-vessels. In half-an-hour all the Caterpillars had fallen down dead, as if suffocated. He then goes on to suggest the sowing of rows of Hemp in beds of Cabbages, Cauliflowers, &c., stating his impression that the odour of the Hemp plants would exercise a sufficiently repulsive influence to protect the vegetables from the attacks of the caterpillars, and concludes by expressing his opinion that watering Cabbages, &c., with water in which Hemp had been steeped would be attended with equally beneficial results.

Celery Fly.

The larvæ of the Celery Fly (Tephrites onopordinis) in some seasons do much mischief to the Celery crops, and as yet no effectual remedy has been discovered. When Celery is infested with the larvæ the leaves become blistered and turn yellow, and as the grubs are underneath the blisters, they may be crushed between the finger and thumb. The grubs, when full-grown, descend into the earth, and remain in the chrysalis state until the following spring, when they give birth to the Fly, which in due course deposits the eggs on the leaves. Therefore, to prevent the attack of the pest next year, leaves badly infested should be removed and burnt, to prevent the grubs attaining their full development. Mr. Rose, of St. George's Hill, Byfleet, having been for some years troubled with Celery Fly, filled a 36-gallon water-barrow with sufficient water to dissolve two 1-lb. boxes of Gishurst Compound, mixing with it 1 lb. of Pooley's Tobacco Powder, and filling up the whole with boiling water, stirring all well together. The mixture, after being allowed to stand for some twenty-four hours, was used to water the affected Celery plants—a watering can with a very fine rose being employed for the purpose. The plants, having been well saturated with this mixture, were then examined, and the grubs which had burrowed into the leaves were all found to be dead. The crop, too, seemed to be greatly improved, the mixture having evidently acted not only as an insecticide, but as a fertiliser. About three weeks after he repeated the same treatment with another crop, with precisely the same results.

Cements.

It may, perhaps, be necessary to explain that the word "parts" in the receipts given below means parts by weight, *i.e.*, pounds, ounces, drachms, or grains.

Boiler Cement.—(1) Chalk, 60 parts; lime and salt, of each 20 parts; sharp sand, 10 parts; blue or red clay and clean iron filings, of each 5 parts. Grind together and calcine. Used to stop cracks and leaks in iron boilers, pipes, stoves, &c. (2) Powdered clay, 6 lbs.; iron filings, 1 lb. Make into a paste with linseed oil. (3) Powdered litharge, 2 parts; silver sand and slaked lime, of each 1 part; boiled oil enough to form a paste. Must be used directly it is made, a remark that will apply to all cements of this class. See also "Iron Cements" below.

Bottle Cement.—(1) Resin, 5 lbs.; beeswax, 1 lb. Stir in sufficient red ochre and Brunswick green or lamp-black to give the desired colour. Used for sealing bottles, barrels, &c. (2) Black pitch, 6 lbs.; ivory black and whiting, of each 1 lb.; to be melted together. This is cheaper than the above and quite as effectual, but it does not look so well.

Coppersmiths' Cement.—Bullock's blood thickened with sufficient finely-powdered quicklime to make it into a paste is used to secure the edges and rivets of copper boilers, to mend leaks in joints, &c. It must be used immediately it is mixed, as it soon gets hard. It may be used for many other purposes, which will easily suggest themselves.

Earthenware Cement.—Grated cheese, 2 parts; quicklime in fine powder, 1 part; fresh white of egg enough to form a paste; the ingredients should be thoroughly incorporated and laid on as soon as possible. Used for china and earthenware. For fine work liquid glue may be used.

Fireproof Cement.—Fine river sand, 20 parts; litharge, 2 parts; quicklime, 1 part; linseed oil enough to form a thin paste. Applied to walls it soon acquires a stony hardness. It is also useful to mend broken stonework.

Glass Cement.—Dissolve 6 pieces of gum mastic the size of a large Pea in as much methylated spirit as will suffice to render them liquid; in another bottle dissolve the same quantity of isinglass, previously soaked in water and allowed to get surface-dry, in 2 oz. of methylated spirit; when dissolved add 2 pieces of either gum galbanum or gum ammoniac, applying a gentle heat and stirring; add the solution of isinglass, again heating and stirring. Keep in a tightly-stoppered bottle, and when wanted for use set the phial in boiling water. This cement, when carefully prepared, is perfectly colourless, and is used for uniting delicate glass vessels. The edges of the broken article must be warmed and pressed tightly together to squeeze out the superfluous cement. For broken flower vases this is the best possible cement. An excellent cement for stopping cracks in glass vessels, to resist moisture and heat, is made by dissolving pressed curd in a cold saturated solution of borax. With this solution paste strips of hog's or bullock's bladder, softened in water, on the cracks of glass, and dry at a gentle heat. If the vessel is to be heated, coat the bladder on the outside, just before it has become quite dry, with a paste of a rather concentrated solution of washing soda and quicklime or plaster of Paris.

Hydraulic Cements.—These are cements which have the property of hardening under water. There are several of them sold under different names, but the best is that known as Portland Cement. Its principal uses in the garden are obvious; amongst those which are not so apparent are the following:—When made into a thin solution like whitewash, this cement gives woodwork all the appearance of having been painted and sanded. Piles of stone may be set together with common mortar, and then the whole washed over with this cement, making it look like one immense block of grey sandstone. For temporary use a flour barrel may have the hoops nailed, so as not to fly apart, and the inside washed with a thin paste of Portland cement, and it will serve for a year or more to hold water. Boards nailed together and washed with it make good hot-water tanks; and it is of use in so many ways that it may be regarded as one of those peculiar things in a garden which it is always good to have at hand.

Iron Cements.—These are used for closing the joints of water pipes and similar purposes. We select the following from a large number of formulæ:—(1) Sal ammoniac, 2 oz.; sulphur, 1 oz.; clean iron borings or filings reduced to powder, 12 lbs.; water enough to form a thick paste. (2) Sal ammoniac, 2 oz.; iron borings; 8 lbs.; water enough. (3) Some authorities state that the strongest cement is made without sulphur, and with only one or two parts of sal ammoniac to one hundred of iron borings. When the work is required to set quickly, the quantity of sal ammoniac is slightly increased, and a very small amount of sulphur is added. This addition makes it set more quickly, but reduces its strength. No more of these cements should be made at a time, for they soon spoil. (4) Iron borings, 4 lbs.; pipe clay, 2 lbs.; powdered potsherds, 1 lb., made into a paste with moderately strong brine produce a cement of great strength when allowed to harden slowly. It is an excellent material for mending cracks in boilers. (5) Equal parts of red and white lead mixed into a paste with boiled linseed oil, form excellent cement for making metallic joints of all kinds. A washer of hemp, yarn, or canvas smeared with the cement, is placed in the joint, which is then screwed up tight. It also serves to join broken stones, and when brought to the proper tint by the addition of the necessary colour, it is very handy for mending chipped stonework, balustrades, vases, &c. (6) To four or five parts of clay thoroughly dried and pulverized, add two parts of iron filings free from oxide, one part of peroxide of manganese, one-half of sea salt, and one-half of borax. Mingle thoroughly, and render as fine as possible; then reduce to a thick paste with the necessary quantity of water, mixing

thoroughly well. It must be used immediately. After application it should be exposed to warmth, gradually increasing almost to white heat.

Liquid Glue.—Finest pale orange shellac broken small, 4 oz.; methylated spirit, 3 oz.; digest in a warm place in a closely corked bottle until dissolved. It should have the consistency of treacle. Or, borax, 1 oz.; water, ¾ pint; shellac as before, 3 oz.; boil in a closely covered vessel until dissolved; then evaporate until nearly as thick as treacle. The first dries very quickly, the second much more slowly. Used for common glass, china, wood, stone, &c. When used for wood, a layer of very thin muslin should be interposed. The Chinese archers mend their bows with this cement. It may also be used for fixing paper to wood, metal, or glass when exposed to damp. Paper labels cemented on to wood with this composition and then dipped into melted paraffin will stand the weather for an almost indefinite period. It cannot be too strongly insisted upon, that the less cement there is between the edges of any mended article, the less likely they are to part company.

Tar Cement.—Coal-tar, 1 part; powdered slate (slate flour), 3 or 4 parts; mix by stirring until thoroughly incorporated. This forms an excellent cement for some purposes; it is easily applied with an old knife or a flat stick, and though it hardens on the surface it remains soft and elastic underneath. The heat of the sun does not melt it, and the coldest weather does not cause it to crack or peel off. Leaky watering-pots, barrels, pails, shutters, sashes, &c., can be easily repaired with it, and much annoyance and loss of time be thus avoided. It will stick to any surface provided it be not oily, and as it does not harden when kept in a mass, it is always ready for use. A gallon will last for a long time.

Cockchafers.

The Melolontha vulgaris, or common Cockchafer, is a most destructive insect, both as a grub and in the perfect condition. The remedies which have been proposed and tried, with more or less success, are numberless. They almost all, however, bear upon the dislodging of the insects from a particular spot, rather than upon a more summary mode of dealing with them. Perhaps the most efficacious is the collecting of the insects and their grubs. The collecting, however, must be continuous and not intermittent, and must be persisted in as long as any are to be seen; and to have a fair chance of success it must be followed, not only by one, but by all neighbouring landholders at the same time. For the perfect insect it ought to take place either very early in the morning or on a very rough day, when the Chafers are hanging loosely to the trees with drawn-up legs, and when a slight shake or blow with a stick will bring them to the ground. On warm, sunny days they are very lively from six o'clock in the morning, and on shaking the trees they fly away or rise from the ground in a manner which increases the difficulty and seriously lengthens the task of gathering them and putting them in sacks. Sacking spread out under the trees greatly assists in the speedy collecting, saving time, and likewise the trouble of much stooping. The grubs, again, are collected in working the ground. Here the depth at which the insects are lying at the time must be kept in mind, in order that the plough may bring them to light, and when gathered together, although the impression is correct that they cannot stand the sun, they should under no conditions of weather be deposited in heaps, even upon a firmly-trodden path, as the undermost can easily bore their way through the ground again, and a part of the trouble taken will be thrown away. Spread flat upon firm ground, with a hot sun shining upon them, they will soon be dead; if there be no sun, they should be put in some wooden tub, or in a watering-pan. An experienced French gardener gives the following remedy as effectual:—In June, where it is possible, he sows in the garden particularly infested by Cockchafers, and where a large brood may be expected, rows of salad, which it is well known the grubs are fond of, and by which they are enticed. In August these places are hoed in a hot sun, thus turning up the young grubs gathered round the salad, and if left exposed the sun soon kills them. This simple work is repeated several times on a very hot day, and according to the assertion of our informant, during the four years in which he had followed it out he had suffered nothing from the grubs. Mr. Booth, the well-known nurseryman, of Hamburg, says:—"About ten years ago we suffered terribly from Cockchafers, whole plantations of Rhododendrons and Conifers being completely destroyed by them. Against such devastation all artificial remedies were more or less powerless. We then adopted the starling plan. We caused 100 breeding cages to be made of the very simplest construction, and in the spring they were all occupied. As soon as the Cockchafer comes, or is coming out of the earth the starling is there; it picks the Chafer clean out, tapping about on the ground with its beak until it finds it. Beside almost every hole from which a Cockchafer has escaped one might find the wings and whatever is uneatable, proof enough that the Chafer's enjoyment of life had not been of long duration. We increased the number of cages, and have now from 175 to 200. We have since then had plenty of Cockchafer years, but have not again experienced such injury from them, and in working the ground to a greater depth for them the number of grubs found is comparatively few." Another remedy adopted by French gardeners is to thickly sow the affected ground in autumn with Colza, which is ploughed in as soon as the first frosts begin to make their appearance. Half-decayed Cabbage leaves, or indeed the refuse of any Cruciferous plant, should be ploughed in at the same time. It seems that the Cockchafer grub cannot stand the leaves of any of the Cruciferous plants in a state of fermentation, the sulphurous emanations given off by them being poisonous to the insect. Planting Cabbages or Turnips in ground infested by the Cockchafer grub is said be effectual in driving them away. Another method, which is only applicable in woods and plantations, is described in the "Merseburgher Official Journal" as having been successfully tried in a nursery belonging to the Royal Forestry at Bischoffsröde, comprising 1½ acres of land, and surrounded by high trees, especially by Oaks, completely ravaged by Cockchafers. Just before the flying time seventeen different spots were artificially prepared as breeding places in the following manner:—Alongside the paths, and near the fences, from 3 ft. to 4 ft. square of ground were covered with fresh manure from 5 in. to 6 in. high, without mixture of straw or any other material; upon this was laid 2 in. or 3 in. of fresh earth, nicely smoothed down and raked. These spots were carefully watched during the flying season, but, owing to the absence of any bored holes, were left undisturbed until the middle of July, when it was discovered that in those spots exposed to the sun the manure was a living mass of grubs ¼ in. in length, whilst in those places more in the shade the number of eggs was inconceivable. These heaps were brought together and collectively burnt outside the nursery.

Cockroaches.

Cockroaches are often great pests in plant-houses, Mushroom beds, and private houses, where they devour everything within their reach.

Arsenic.—Mix some arsenic with honey, and lay it on scraps of paper about the floor for them to eat. If Arsenic be mixed with boiled Potatoes, and laid about in the same way, it will answer the same purpose.

Bracken.—Another remedy is said to be to procure some Bracken, Pteris aquilina, or common Fern, plentiful on commons, and put it down about the house at night. The black beetles will eat it ravenously and soon die, and their relatives will pick their bones. It is commonly used in the north of England.

Honey.—Mix some honey and water together. Two teaspoonfuls of honey will be ample for half a common basinful of water; put the basin on the floor at night, half filled with the mixture, and place three or four small sticks, about ½ in. wide, to rest on the edges of the basin for the Cockroaches to walk upon. They will fall into the liquid and get drowned. Some tumbler-glasses half filled with the mixture, and sunk to the rim in pits in the tan or soil, make excellent traps for them. Porter and brown sugar is said to be equally efficacious.

Oatmeal.—Bait them well with oatmeal for three or four successive nights, or until such time as they feed greedily on it; then mix some arsenic with the meal for one night, repeating the process from time to time if necessary. Mr. Wilson states

that if a bowl be wrapped round with a wet cloth they will get into the bowl, from which they cannot escape.

Phosphorus.—A very simple and effectual remedy is given in the "Revue Horticole," communicated by M. Loury, chief propagator at the Jardin Fleuriste, Paris. It is as follows:—Dissolve the heads of a couple of boxes of common phosphorus matches (not *Safety* matches) in a pint and a half of water; then mix with it about 1 lb. of flour, and add about ½ lb. of sugar, of which these insects are very fond. The mixture may then be distributed in various parts of the house overnight on pieces of board, slates, &c., and when examined in the morning, numbers of dead cockroaches will be found close to wherever the poison has been laid.

The remedies given for Crickets are equally effective in the case of Cockroaches.

Concrete for Floors and Walks.

After the ground on which the floor or walk is intended to be made is levelled, let it be covered to the thickness of 3 in. or 4 in. with stones, broken small, and well rammed; upon which let there be run, about 1½ in. above the stones, one part, by measure, of Portland cement, and two of coarse sand and fine gravel mixed to a thin consistency with water. Before this coating has become thoroughly set, lay upon it a coat of Portland cement mixed with an equal part of fine sand, and ½ in. thick. The addition of blood will render this compost harder. Concrete for weak foundations, and for the bottoms of cattle-boxes and manure-pits, when not sufficiently stiff and sound to be impervious to water may be made as follows;—Newly-burned lime ground to a fine powder, 2 parts; Portland cement, 1 part; gravel, broken stone or brick, 6 parts. Mix the above with water to a liquid consistency, and let it be thrown into its position from a height of 10 ft. or 12 ft., and when partially set let it be well beaten or rammed to render it solid.

—— Another Concrete for the last two foregoing purposes, and also for garden walks:—Equal parts of gravel, well screened, and clean river or pit sand. With five parts of the mixture of gravel and sand, mix one part of Portland cement. Mix with water, and apply 2 in. thick.

—— For fruit tree borders, having made the excavation, put in a 3 in. layer of coarse gravel, ram it firm, and then run with concrete, formed of nine parts gravel and one part unslaked lime; slake it, and cover it with the gravel, then add sufficient water to bring the Concrete to the consistency of very thin mortar; a thickness of 3 in. of Concrete will be necessary. It ought to be made so thin that it must be carried in a bucket. The gravel used should be of the same kind as put upon walks. Let the Concrete stiffen a little until it will bear treading upon; then roll it firm, or ram it hard, leaving a smooth surface. Let it stand until firm, and then finish with an inch thick of fine gravel mixed with lime, in the proportion of one part lime to three of gravel, and this mixture cannot be too soft. When it becomes stiff and hard, as it will in a few days, put in the rough stones for drainage, not less then 6 in. in thickness, and the drain along the front, which should be placed on the Concrete and be covered with the drainage. If you do not object to the expense, one part in six of Portland cement added to the lime and gravel for the last 1 in. coating would be more certain to prevent the roots penetrating the Concrete, though we never knew them pass the lime and gravel. In place of 1 in. thick of lime and gravel, you may have a layer ½ in. thick of Portland cement one part, and fine gravel three parts. This when run and dry will resist anything, but it would be more costly.

Crickets.

Crickets are often troublesome in plant-houses and elsewhere, especially amongst soft-wooded cuttings or young seedlings; but they are somewhat eccentric as to food. In some places they will devour greedily a particular plant; and in others they may exist in quantities, and not even touch the same plant. They may also inhabit a house for a long period without making their presence known in any way except by their voice. They may be got rid of in the same way as Cockroaches. The following remedies may also be tried:—

Arsenic.—Mix some roasted Apple with a little white arsenic powdered; divide the Apple so prepared into small bits, and place it in saucers in the room at night.—Take 1 pint of oatmeal and 2 oz. of arsenic, together with a little ground Aniseed and Caraway-seed mixed with it. This should be laid on pieces of paper, in convenient places, for the Crickets to partake of it.—Also arsenic and honey may be mixed together, and laid about for them. Lay it in bits, about the size of a small French Bean, on the smooth side of oyster shells, pieces of glass, or broken glazed crockery; it is necessary to use something that has a hard smooth surface that will not absorb the moisture from it, or it will be so dry after the first night, as to render it useless. By using any of the above-named articles it will be fit for use for three nights. But this preparation must be used with caution, as domestic animals will eat it and be destroyed thereby. On the nights on which it is laid down exclude the garden cats from the houses, or these most useful animals will come to an untimely end. After being used for three nights the poison gets too dry for the Crickets to take it freely. By using it once in three months the insects will not do any serious harm; but where they have been allowed to get to such a head as we see them sometimes, it is necessary to keep laying down the poison every night for a fortnight or so, to bring them well under.

Carbolic Acid.—A little carbolic acid poured into their holes also puts them to flight.

Oatmeal.—Get a box with small holes in the top and sides; put some oatmeal and salt in it, and set the box at night in the room.

Rhubarb Leaves are said to be a cure for Crickets. A large bakehouse was some years ago infested with Crickets. As the hot weather came on the nuisance became very serious, for Crickets were to be found in every possible crevice. The baker was advised to lay some Rhubarb leaves about the place. The light of the next morning revealed nibbled leaves and myriads of dead Crickets; and this was the last of them in that bakehouse.

Water.—Take a dozen of old jam pots, half fill them with water, and at night place them in different parts of the room most infested.

Damp Walls.

The "Builder" gives the following remedy for damp walls:—Three-quarters of a pound of mottled soap to 1 gallon of water. This composition to be laid over the brickwork steadily and carefully with a large flat brush, so as not to form a froth or lather on the surface. The wash to remain twenty-four hours to become dry. Mix ½ lb. of alum with 4 gallons of water; leave it to stand for twenty-four hours, and then apply it in the same manner over the coating of soap. Let this be done in dry weather.

In the case of stone walls the following ingredients, melted and mixed together, and applied hot to the surface of stone, will prevent all damp from entering, and vegetable substance from growing upon it:—1½ lb. rosin, 1 lb. Russian tallow, 1 qt. linseed oil. This simple remedy has been proved upon a piece of very porous stone, made into the form of a basin, and two coats of this liquid being applied caused it to hold water as well as any earthenware vessel.

Dyeing.

Mosses, Grasses, and Everlasting Flowers may be most easily dyed by means of Judson's Simple Dyes. Dyeing with ordinary dye stuffs is a difficult matter, requiring more chemical experience and knowledge than is generally found amongst amateurs. Receipts for dyeing flowers are frequently given in gardening periodicals, but most of them are useless and impracticable. A list of receipts taken from the German has lately appeared in at least three gardening papers, which contain a series of colouring matters such as Munich lac (? lake) and mineral blue (there are a dozen mineral blues). A solution of borax is said to dye flowers orange, and in one receipt ¼ pint of ultramarine blue is ordered to be dissolved in 6 oz. of water, but for fear that the unfortunate amateur dyer should be puzzled how to dissolve ¼ pint of an insoluble pigment in so small a quantity of water, an explanation is added stating that ¼ pint means ½ drachm.

Earwigs.

Taking advantage of the fact that these insects feed in the night, almost any substance in which they can conceal themselves in the day may be employed to trap them. The usual practice of placing a small inverted flower-pot with a bit of Moss in the bottom, on the top of the stake to which the plant is tied, is not a bad means of catching them, provided the pots are regularly examined. Another trap commonly used is, small bundles of Bean-stalks tied up, cut 6 in. or 8 in. long, placed in each plant, and looked over daily by shaking the end of the bundle on a board or other substance, by which they can be destroyed. The most simple and effective traps are pieces of newspaper, crumpled roughly up in the hand, and stuck anywhere in the plants, unfolding them two or three times a week, when numbers of the insects will be found concealed in them. If there happens to have been bred a nest of young robins near the ground, the numbers of Earwigs they will eat, when they have taken flight and got old enough to find their own food will astonish anyone taking the trouble to watch their movements. In the case of Dahlias (and there is perhaps no flower to which they do so much harm as to the Dahlia), the use of thin muslin bags, in which the buds are placed before they expand, drawn up close round the stalk of the flower so as to prevent the insects getting to them, is also a method followed by some growers. A piece of cotton-wool, twisted round the flower-stem just behind the bud, will prevent them getting to the flowers. By resorting to some or all of these methods, their numbers can be so far kept under as to prevent the disappointment of finding all the best buds rendered useless. As preventives, the circular earthen pans that are made for the purpose, in the fashion of a collar to the plant, are very effective. They should be put down firmly and kept full of water, and nothing in the shape of a bridge should ever be allowed to make a way for the Earwigs to cross the water. Mulching is said by some to induce Earwigs, but this hardly seems reasonable, for whatever keeps the ground cool and moist acts as a preventive.

Food for Bees.

When honey-yielding flowers are scarce, Bees require to be fed artificially. The following mixture is used by some of our most successful bee masters:—Add a gill and a half of water to half a gill of the best vinegar. Pour the mixture into a saucepan, add 2 lbs. of loaf sugar, and boil until it assumes a yellow colour; then pour into a well-greased dish, and cut up before it is cold into strips convenient for insertion into the hives. Should it candy on cooling, it is a proof that it has not been boiled enough, and should be returned to the saucepan without water, and boiled again.

Fumigation.

It is, under some circumstances, no easy matter to fumigate a house or pit effectually. Take a flower-pot 18 in. in diameter, which has previously had a hole made in the side about 1 in. or so above the bottom. In the bottom of the pot put a few red-hot cinders, and to ensure the material employed for fumigating purposes igniting readily, add a handful of brown paper, quite dry, and torn into small pieces. When the brown paper commences to burn freely put a little dry Tobacco, or Tobacco paper, and then add in a gradual manner the properly-prepared material. The Tobacco paper, or rag, should be broken up into rather small pieces, and damped just sufficiently to prevent its burning too freely and bursting into a flame. As soon as the pot is filled and the material well ignited, it can be placed in the house, and with very little attention it will continue to give off dense clouds of smoke, until nearly the whole of the material is consumed. It is most essential the directions here given should be strictly followed; as, for example, if the Tobacco paper be used too dry it will burst into a flame, and the plants will be seriously injured; and if the damp material be put upon the cinders, it will not burn satisfactorily unless it is continually blown, and to remain in a house partly filled with smoke is not pleasant. The fumigating pot must be watched from the outside, and the material occasionally stirred and be lightly sprinkled with water, for the most disastrous results will follow if the material burns through and remains without attention for any length of time. The structures should, as a rule, be filled so that it is impossible to see more than 15 in. or so beyond the glass, and the fumigation should be repeated about two days afterwards. The evening is the best time for fumigating, and still weather should be taken advantage of. Remove all plants in bloom previous to the fumigation, as the flowers soon fall after the exposure to the Tobacco smoke. The foliage must be perfectly dry at the time, but a thorough syringing is desirable in the morning following. In smoking plants in small places, such as garden frames, there is always danger, as in such small space the smoke gets out before it has time to effectually kill the insects, necessitating a stronger application than the plants frequently can bear. Covering the lights with mats assists the retention of the smoke. Damp, mild evenings are the best for the operation.

Mr. Baines says:—"In fumigating large or small houses it should always be borne in mind that the nearer the plants are to the roof the more certain is the destruction of the insects, the smoke being the most dense near the top of the house; it will also be obvious that the closer the laps are in the glazing the more effectually will the smoke do its work; where the laps are open it is good practice to cover them with mats or any available material that will assist in confining the smoke. In the case of plants that will bear syringing overhead with clean water, it is well to give them a good washing the morning after; any of the insects that are nearly but not quite killed will receive the finishing stroke by this. Whatever material is used for fumigation, Tobacco, Tobacco-cloth, or paper, see that it is sufficiently moist to prevent its flaming, or it may do serious harm. The operator should, as a rule, stand outside till the house is sufficiently fulf of smoke to see that the material does not burst into flame, but simply smoulders. A good plan is to sprinkle a little damp Sphagnum over the material as soon as ignited; it cools the smoke and prevents flame. Care must also be taken, that whatever is used to ignite the fumigating material does not contain any deleterious gases likely to be injurious to vegetable life. Coal in a half-burnt state is liable to do much harm in this way. Wood-embers, charcoal, or a little coke are the best. The material should always burn quickly, throwing up a dense volume of smoke, so as to fill the house in as little time as possible; there is then less danger of drying the atmosphere of the house so as to be injurious to plant life. In the density of the smoke required to kill the insects, the operator must be guided by his knowledge of the strength of the material he is using, the size of the house, and the description of the plants it contains. The larger the house the less danger I have found of injuring its occupants by fumigation; consequently, such houses may be filled more densely with the smoke than plants in small houses will bear. The implements used for fumigating are various, from a garden-pot with a hole in the side to those mechanical contrivances that are frequently making their appearance, but which are more for sale than use. The fumigators which I have had in use for fourteen years, and which are the best I have seen, are made of strong sheet-iron riveted. They are 10 in. in diameter by 9 in. deep, on three legs 1½ in. high; the bottom and sides, half-way up, are perforated with holes one-eighth of an inch in diameter, 1 in. between the holes; they have stout handles, very similar to that of an ordinary saucepan. This is much better than a handle across the top, for if the material does not burn freely, the vessel can with greater convenience be swung repeatedly backward and forward, the draught quickly causing it to burn freely. I use one of these fumigators at each end of the house requiring smoking, by which means it is filled more rapidly."

Peach trees or Nectarines which are attacked with green fly may be fumigated on the open walls by procuring two poles long enough to reach from the top of the wall to the bottom, placing them one at each side of the tree, allowing them to rest against the top of the wall, and setting them 2 ft. away at the bottom; then get a carpet or blanket and lay over them, securing it well to the wall on each side, so that it will not allow the smoke to escape; the smoke may be blown underneath the bottom by means of a fumigator. The day after the tree has been fumigated it should be well syringed,

and the ground dug underneath. One of the cheapest and most effective appliances for fumigating is a wire basket, 1 ft. sq. and 6 in. deep, with a strong wire from each corner to suspend it by. Into the bottom of this throw a handful of hot cinders, and over that another handful or two of charcoal. Then swing the basket about for a few minutes, and you will have a good red fire. The best Tobacco for fumigating is undoubtedly common Shag, which properly used is cheaper than most of the Tobacco-papers now offered to the public. In using this Tobacco, procure a handful or two of wet litter from the stable, and, chopping it into pieces about 1 in. long, mix it with the Tobacco as intimately as possible. Then place it on the fire, give the basket a swing or two in the air, and a volume of smoke will be evolved that will fill the house in a few seconds, and not only that, but, if the mixture be in a proper state of humidity, it will continue to burn for some time, and thus keep the house filled—a very important point in destroying thrips. Suspend the basket in the house, and the only further precaution necessary will be to watch and damp it should the Tobacco burst into flame. By these simple means fumigating is reduced to a minimum of trouble, and to fill half-a-dozen houses with Tobacco fumes in thirty or forty minutes is an easy task.

Fungi.

It is sometimes desirable to preserve specimens of Fungi for future or more convenient examination. For such purpose the following mixture has been recommended:—Sulphuric acid, 2 pints; water, 8 pints; mix and add creosote, 1 pint. Bottle the Fungi in this and cork tightly. It is said to preserve them perfectly without change of colour. Fungi may be preserved by drying, by bedding them in silver sand, gills upward, in tin boxes, and placing them in a slow oven for two or three hours. They may also be very well preserved in spirit if required, which preserves the colour; the preservation of this, is, however, generally quite unnecessary.

C. W. Quin.

SILKWORMS.

Having experimented in Colchester during the past fifteen years on all the known varieties of Silkworms, with the view of their introduction into England and its colonies, and having ascertained, by actual experiment, that the most profitable race was that of the Bombyx Mori, and that the growth of the white Mulberry tree and the cultivation of its Silkworms were easily accomplished in the greater part of the English isles, it has given me great pleasure to read in the "Times," of the 19th ult., a letter from Mrs. Neile, who has done so much for Mulberry silk culture in Australia, advocating the cultivation in England of "grain," or the production of eggs of the best races of Mulberry Silkworms for sale in Southern Europe. As I believe the main features of the case are unknown in England, and as the introduction of a new industry, so easy and simple to carry out, yet so lucrative in its results, will be hailed as a boon by all friends of the British farmer (who now finds himself unable to compete with the world in the growth of cereals, and liable to sudden and heavy losses from disease, &c.; if he venture on breeding or rearing stock), I crave the indulgence of a few lines to explain the position in which this country stands with regard to sericulture, and to indicate what may reasonably be expected to be effected if the matter be gone into with prudence and perseverance. When I found out some ten years ago that about £1,000,000 sterling was annually sent from Europe to Japan by those interested in sericulture to purchase fresh, healthy "grain," their own stock having been either worked out or enfeebled by disease, it occurred to me that some of this money might be diverted to this country to enrich our own people. I found that several scientific Frenchmen of eminence—notably M. Guérin-Menneville, Government Inspector in France—had been very favourably disposed towards "silk," or rather "grain," culture in England. I found that on the borders of Hampshire and Surrey Captain Mason had for years grown the white Mulberry tree, and produced silk which had been exhibited with first-class honours. My first trials at Colchester, being dependent on bought or borrowed Mulberry leaves (an uncertain supply), were not very successful. Having now got a good supply of white Mulberry trees in thriving condition (about 2 acres are planted out), my experiments during the last two years have been very successful. I have had shoots on these trees which in one year grew from 5 ft. to 6 ft. long. I have educated and fed the worms, derived from one of the best sources in Europe, in a room, almost without disease and almost without fire in June, July, and August, and have produced both years a small lot of fine grain, the parent cocoons of which have been pronounced excellent by good judges. Moreover, the introduction of several new kinds of stoves, which produce a high temperature in the Silkworm room without giving off any deleterious gases, gives us these great advantages—that the education of the worms is most rapidly hastened, reducing the period of the caterpillar stage from six to three weeks; they render the cultivation of the worm independent of any weather; and no carbonic acid or other noxious gas is given off to injure them. In the words of one of the inventors, Dr. Carret, "Healthy Silkworms can by means of these stoves be educated in any country where the Mulberry tree grows, independently of the weather." Therefore, the education of Mulberry Silkworms in England ought to be an assured fact. I wish, however, to correct a prevailing misconception. The ordinary Silkworm, such as obtained in Covent Garden, being an Indian (Dasce) race, producing the yellow or white-pointed cocoon, is for commercial purposes useless; the cocoons do not produce sufficient silk. The most paying product in Silkworm culture is that of good grain or eggs, and evidence of the quality of the parent cocoon is always required before eggs can be sold in silk-growing countries. Hence the best races free from disease must be obtained, or those who wish to take up sericulture will be disappointed in the result. The old Brienza race, regenerated by Mons. Roland, of Switzerland, exhibited in the International Exhibition of 1873, is the best now extant in Europe, and the one which I have reared in England with success. Lastly, any person going into the subject must be prepared during the months of June, July, and August, to devote much time regularly and constantly every day, as the Worms require close attention, or the result will be worthless.

Now as to the commercial results: Japan, as a grain-producing country, is now worked out. All her best grain has been exported to Europe, and last season the purchases of grain did not amount to one-eighth of former sales. The South of Europe can take from us instead of from Japan, a million oz. of eggs, if we can only produce them, at a price of from 15s. to 21s. per oz. of 30 grammes, and will be very glad to get eggs, if only healthy, from us. If properly managed, 1 oz. of eggs will produce in grain 100 oz., or £1 will produce £100, leaving a large margin for profit after all expenses have been paid, but generally half that result will afford a splendid profit. The education may be effected by women and children, if only the leaves be collected by a man. The Southern, Midland, and Eastern districts are admirably adapted to the growth of the White Mulberry tree. I am very glad, therefore, to see that others besides myself are interested in this important question, and I trust that the subject, once fairly ventilated, will not be allowed to rest till practical results have been obtained. I shall be happy to show my cocoons to any one interested in this question.

Alexander Wallace, M.D.

Trinity House, Colchester.

Garlic Butter.—I daresay somebody would like to know how to make this delicious relish. Take Garlic, peel it, and cut lengthwise into bits, put them in a mortar, and rub to a paste, always rubbing "the same way round." As you rub keep adding Olive oil till the "ajioli" assumes the consistence and appearance of clear yellow honey. Squeeze a Lemon into it, and after a final rub put into a jam-pot. It will keep several days. Spread on bread, or stirred into Bean or Garbanzo porridge, or eaten as a relish with any food, it is delicious and very wholesome. In the wine shops in Spain they put sodium-chloride into it, much as British publicans salt beer. In Spain red pepper is also often added; this makes it nicer to some, but not so palatable to others. Again, Apple is often rubbed up with it to make it bland for some palates. Garlic thus prepared is an especially wholesome dainty for those liable to the common diseases of the respiratory apparatus. If the Garlic be fresh it will take a very great deal of oil. Quite a small handful will be enough for a quart, gradually added. The oil becomes solid in the process, as solid as jelly, or honey at a low temperature. How this curious phenomenon results I do not know. This "ajioli," or Garlic butter, is capital spread thinly on bread, and is incomparably wholesomer than cow-butter. When quite newly made it will doubtless seem a little full-flavoured to some tastes, but becomes milder after it has been kept for twenty-four hours. All whom I have told about it like it very much—children notably. Sound and unadulterated butter costs now close upon 2s. per lb. here in Suffolk. Garlic costs 1s. per lb., and Lucca oil of good quality less than a shilling. Garlic butter, then, costs about half the price of cow's butter. It is strictly human food, whereas dairy produce is merely a substitute for human food, like meat. Those who have gardens can grow Garlic at no cost at all, as it grows readily and yields abundantly. The oil must be good. —"Dietetic Reformer."

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

September 6th.

Among subjects exhibited on this occasion were excellent stands of Dahlias, furnished by Mr. Turner, Mr. Keynes, and Mr. Rawlings; and Asters and Green Gage Tomatoes sent in competition for Messrs. Carter & Co.'s special prices were of really excellent quality. A specimen of the creamy-yellow Lilium neilgherrense came from Mr. G. F. Wilson; and Mr. Cannell sent the crimson-flowered Fuchsia boliviana, which is similar to the old F. fulgens in habit, but has more slender and darker crimson flowers borne in terminal-drooping panicles. Another variety of Fuchsia, with sub-erect pale lilac flowers, named F. erecta, was also pretty, but scarcely distinct enough in colour to become a first-rate decorative plant; it will be useful to the hybridists, however. Mr. Perkins, of Leamington, showed two handsome tuberous-rooted Begonias of robust habit, to which allusion is made elsewhere. Mr. G. F. Miles, Wycombe Abbey, contributed the handsomest dish of Crawford's Early Peach we have yet seen—large highly-coloured fruits averaging 8 oz. each. These had been grown on a wall in the open air, and were deserving of all praise.

First-class Certificates.—These were awarded to the following new plants and florists' flowers:—

Dahlia, John Downie (Keynes).—A well-shaped whitish flower, each pip being tipped with bright lilac-purple. As a show flower this is really an acquisition.

Dahlia, J. W. Lord (Keynes).—A large and shapely flower, of a bright orange-vermilion colour, well worth culture, but scarcely a first-class flower.

Dahlia, Minnie Bond (Keynes).—A pale rosy-lilac tipped variety, having a soft buff centre; a distinct and desirable kind, either for show or decorative purposes.

Dahlia, Figaro (Turner).—A distinct variety of average size, the colour of which is a bright orange-vermilion.

Dahlia, Earl of Beaconsfield (Rawling's).—A very handsome kind, having large, well-shaped flowers of a rich plum-coloured tint, with a full centre. It is a variety well worth cultivating as a show flower.

Lilium neilgherrense (G. F. Wilson).—A noble trumpet-flowered Lily; indeed, one of the finest of the L. longiflorum type. The flowers, which are massive, measure nearly 9 in. in length, the reflexed segments being of great substance and wax-like, and of a soft creamy-yellow colour. It is agreeably perfumed, and is undoubtedly one of the finest of all autumnal-flowering Lilies.

Zonal Pelargonium Madame Buchler (Cannell).—A dwarf-habited variety, bearing well-elevated trusses of purplish-crimson semi-double flowers, well worth culture as a decorative pot plant.

Begonia, Excellent (Perkins).—A stout-habited, tuberous-rooted variety, bearing axillary trusses of four or five bright crimson-scarlet flowers of good form, and about 2 in. in diameter. The plant is about 18 in. in height, and very floriferous. It is said to be a cross between B. stella and B. Prestoniensis superba.

Begonia, majestica (Perkins).—This is similar in habit of growth to the last, but taller, the flowers being fully 3 in in diameter, and of a bright rosy vermilion or cerise colour, produced in three-flowered, axillary fascicles. It is a distinct and valuable plant for decorative purposes, and is of the same parentage as the last.

Quilled Aster, Unique (Benham).—A well-shaped and full flower with a white centre, the outer rings of guard florets being of a pale rosy lilac or flesh colour. The blooms shown were slightly past their best, but it is evidently a desirable variety.

Miscellaneous Plants.—Mr. Noble, of Bagshot, again exhibited his new crimson-purple Rose Queen of Bedders, to which a first-class certificate was awarded a few weeks ago. It is a seedling from Sir Joseph Paxton, a well-known Bourbon Rose, and it is dwarf and vigorous in habit, each branch bearing flowers and buds amounting to eight or ten in a cluster, and being dwarf and having a natural inclination to spread, no summer pruning or pinching is required. A group of variegated and other Fuchsias came from Mr. J. Kingsbury, nurseryman, of Southampton, among which a variety named F. Kingsburyana was very dwarf and floriferous, having carmine sepals and a double white corolla. Mr. H. Cannell, of Swanley, showed a very interesting group of seedling and other Fuchsias, to which we have already alluded. The collections of Asters shown in competition for Messrs. J. Carter & Co.'s prizes were very good, the varieties being—Princess Alexandra (carmine-white centre), Snowflake (white), Purple Prince (bluish-purple), and Prince of Novelties (white centre, splashed carmine edge). Mr. Benham had the best flowers, but was disqualified, and Mr. Gilkes, of Wickham, Newbury, was awarded the first prize; Mr. J. Morgan, gardener to Major Scott, Wray Park, Reigate, being second, with even, bright-coloured blooms. These varieties of Quilled Asters are dense and cushion-like, and are well worth culture for decorative purposes. Mr. G. F. Wilson showed a new Echeveria from the Rocky Mountains, very similar to E. Murrayana, and also a plant of the dark velvety-leaved green-veined Lobelia subunda, to which a second class certificate was awarded. A plant of Nerine curviflora major in bloom was sent by Mr. B. Reeves, of North-end Lodge, Walham Green. It bears glistening orange-scarlet flowers, very much in the way of N. Fothergilli. A showy collection of dwarf French Marigolds came from Mr. R. Dean, the colours being distinct and the plants certainly very dwarf in habit. A seedling Gladiolus, named Jeanie Tillery, was shown by Mr. W. Tillery, of Welbeck; its flowers are of a bright carmine tint, splashed with crimson. From Mr. A. Dean came a Potato grafted on a Tomato, a union to which reference will be made hereafter. Colonel Trevor Clarke sent a very pretty white-flowered Begonia named Moonlight, which has dark velvety leaves, something like those of B. Pearcei, and light panicles of white flowers. It is a profuse bloomer, and well deserves culture for flowering in autumn and winter; another variety resembling B. Weltoniensis in habit, but taller and with salmon-tinted flowers, came from the same exhibitor, and was interesting as being a cross between B. Weltoniensis and B. Sutherlandi. Cut blooms of hybrid Ivy-leaved Pelargoniums, Model and St. George, came from Mr. J. George, of Putney Heath, the colours being bright carmine. Among Dahlias from Mr. Charles Turner and Mr. J. Keynes, several of the new flowers were certificated. Among Mr. Turner's blooms we noted Christopher Ridley, reddish-scarlet, and fine in form, but rather too small; Drake Lewis, already certificated, a fine, full, crimson-scarlet flower, well worth culture in select collections. A small stand of the older flowers deserves notice, the best blooms being John Standish, a dark crimson; Memorial, rosy-lilac; and Sir G. Smith, purplish-crimson. Mr. Keynes had Ada Radford, a soft puce-tinted flower; John Wyatt, scarlet; John Frazer, deep purple; and Monsieur Chauvier, a good puce variety, speckled and striped with crimson. Mr. G. Harris, of Orpington, Kent, sent two new seedling Dahlias of average merit, named Novelty (maroon striped) and Senator (buff tipped with red). An interesting stand of Pompon or small-flowered Dahlias, came from Mr. Charles Turner; they consisted of kinds possessing distinct and beautiful colours, and being neat in habit and floriferous, they cannot fail to be useful in the shape of cut bloom.

Fruit and Vegetables.—A splendid dish of Early Crawford Peaches, to which allusion has already been made, came from Mr. Miles. The Early Crawford is a yellow-skinned variety, suffused with dark red on the sunny side; the six fruit shown weighed 3 lb. Two or three Melons were shown, but they were of inferior quality. The competition for Messrs. Carter's special prizes, offered for their new Green Gage Tomato, was a spirited one, there being sixteen exhibitors. Mr. Douglass, of Loxford, had the best fruit; Mr. J. Morgan the next best; and Mr. Brown, gardener to F. T. Barry, Esq., Beckenham, was third. Nine varieties of dwarf French Beans, all in good condition, came from the Society's garden.

NOTES AND QUESTIONS—VARIOUS.

Variegated-leaved Kentucky Coffee Tree.—This new variegated form of Gymnocladus canadensis I saw growing the other day in the old nurseries, Cheshunt. It is of rather slender habit, has long leaves beautifully variegated, and is likely to become useful as an ornamental shrubbery plant, or for combination with sub-tropical plants.—S.

White Bedding Dahlia, Marguerite Bruant.—This fine variety is readily distinguished from others of the white bedding group by its compactly dwarf, robust growth, not more than 2 ft. in height, and in outline of growth remarkable for its dense, full habit and free ample foliage, above which its profusion of pure white bloom rises clearly and effectively. It forms a beautiful decorative group on lawns, or a very effective second row or line in a ribbon border.—W.

Drumhead Lettuce.—This stands the dry weather best here without running to seed. It remains good ten days or a fortnight after the Paris Cos, Victoria, and All the Year Round have run to seed.—W. W., *Eaglehurst.*

Sutton's Duke of Connaught Cucumber.—This is a fine variety, especially for purposes of exhibition, as it swells off evenly and its average length is 24 in. Like all long Cucumbers it should be grown on a trellis, but if structures suitable for that purpose be not available, special means should be provided for keeping the Cucumbers straight.—J. G., *Henham.*

Winter Spinach.—All kinds of green crops having suffered more or less from drought, an extra breadth of this useful winter vegetable should at once be sown. After the ground has been thoroughly well prepared for it by deep digging, draw shallow drills and soak well with water both before and after sowing the seed, cover with the moist soil first, and then put dry soil on the surface to prevent evaporation.—J. G.

Fenn's Woodstock Kidney Potato.—I saw the stock of this fine, new Potato lifted recently at Woodstock, and I must say that a finer and more abundant crop I have never seen. This is one of a batch of seedlings of which Dawe's Matchless is one of the parents. The tubers are of fine form and handsome, resembling those of the Fluke in shape and produced in great profusion. The haulm is robust, and requires open culture and plenty of room. In quality the tuber is superior to that of the Lapstone, and is a capital keeper. Mr. Fenn regards this variety as one of the best he has yet raised.—A.

Large Yield of Potatoes.—The following is the produce of a few kinds of Potatoes grown in the gardens at Arundel. They were planted on the 6th of May last, and lifted on the 28th of August:—Compton's Surprise produced 4 bushels from 7 lbs of seed; Brownlow's Beauty, 7 bushels from ½ peck of seed; Eureka, 5 bushels from 2 lbs. of seed; Snowflake, 2½ bushels from 2 lbs. of seed; American Late Rose, 4 bushels from ¼ peck of seed; American Bread Fruit, 5 bushels from ½ peck of seed; New Extra Early Vermont, 3½ bushels from ½ peck of seed; Bresee's Prolific, 3½ bushels from 7 lbs. of seed.—J. F.

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."

HINTS FOR AMATEUR LANDSCAPE GARDENERS.

By JAMES M'NAB, Royal Botanic Garden, Edinburgh.

THE season has arrived when trees and shrubs of an overgrown character must be cut and kept within proper bounds, both on account of their own appearance and that of the landscape of which they form a part. To see finely-shaped, good specimen trees ruined from close proximity to inferior ones or trees of a coarse or rapid growth, is, to say the least of it, annoying. Perhaps the most noted instances of this occur in the case of large Poplars and Elms, many of which exist in our town squares, villa gardens, and in some extensive demesnes. By coarse trees I mean such as were originally planted for nurse purposes, and which no doubt were intended to be removed as soon as they began to interfere with trees planted at the same time for permanent embellishment. The landscape gardener or planter originally entrusted with the formation of the work may, however, possibly have been to blame in not giving implicit instructions in writing of what was to be done in regard to thinning and pruning, also in not stating the proper time at which the removal of certain trees was to take place, the kinds to be permanently retained, and the distances at which they were to stand. In some cases I find, however, that written specifications for carrying out planting operations are but little studied after such works have been finished, and that according to contract. Some years since, while looking over a plantation several acres in extent, planted about thirty years ago, and belonging to a large educational seminary, I was surprised to find the trees all very thick, although their appearance showed that they had been planted originally in a systematic manner, and therefore made inquiry, in order to ascertain if the contractor had left any written specification regarding their future management. After some trouble the specification was found, when it was evident that it had not been consulted since the period of planting. In consequence of this neglect the trees had got into a mass of confusion. Those planted as avenue trees, to stand at stated distances apart, were crowded up with Poplars and other nurse trees originally intended to be removed. As the trees in the avenue lines had in a great measure been injured by proximity to the nurses and other ornamental hard-wooded trees, the regularity originally intended to be maintained could not be preserved. Extensive plantations are generally well managed by practical men; but places of one, two, or more acres are for the most part left to the care of the proprietor, whose object is to get up shelter at any cost, and often without reference to ultimate embellishment. In this way great irregularities occur which it is often difficult to put right. Poplars which are generally the cause of the mischief, should be kept by themselves, either for shelter or for background seclusion, and if required they can be pruned with impunity even at any stage of their growth, so as to enable them to be kept in something like their proper shape. Some specimens of them with which I am acquainted, thirty-six years of age or so, with stems from 4 ft. to 5 ft. in circumference, and about 40 ft. in height, were pollarded about 18 ft. above the ground. The following year numerous shoots were produced all over their stems. The year after that all the lower new-made branches were removed, and the top ones shortened to within 10 in. or 12 in. of the stem. These branches are subjected to a cutting every two or three years. By this treatment the tops become somewhat spherical, and continue to be so as long as branch shortening is adopted. Large unpruned Poplars in the neighbourhood of a mansion are often positively dangerous, their large limbs being frequently blown down; and if it should be found necessary to remove them, great difficulty often attends the operation. The branches in such cases must be lowered down piecemeal by ropes, in order to prevent them injuring buildings, fences, or neighbouring ornamental trees. Lombardy Poplars are often employed extensively in villa gardens, owing to their occupying but little space in comparison with other trees, but when they become 8 ft. or 10 ft. high, they are apt to become bare at the bottom and leafy towards the top. Where this is the case, it becomes necessary to reduce the height of each intermediate tree to about 6 ft., giving each cut specimen a good surface-dressing at the same time. The pollarded trees soon become furnished below, while the unpollarded ones fill up above. After the specimens that were cut down begin to grow freely, those uncut in a few years may be treated in the same way. By this successional way of cutting the tops of Lombardy Poplars they assume an irregular outline in the landscape, which is infinitely better than all being of one uniform height. Large branches of Poplars, say from 10 ft. to 12 ft. in length, and 18 in. or so in circumference, may be inserted in the ground as cuttings, and it matters but little which end is inserted. I have seen some put in upside down, and grow as well as if they had been inserted in the right way. Numerous shoots will always be produced from the stems; the under ones should be removed and the upper ones shortened. If this shortening be carried on every three or four years, they will ultimately make good trees for shelter, and will often be more pleasing in appearance than unpruned trees, the branches of which extend in all directions. In a paper on the pollarding of large trees, inserted in THE GARDEN (see Vol. VII, p. 511), it is stated that a large number of Hardwooded trees which overhung a wall along a public road in the neighbourhood of Edinburgh, were some years ago condemned, in consequence of some of the large branches being blown off, obstructing the traffic, and being dangerous to the public whilst walking under them. The pollarding and cutting in of the branches were effected during the winter of 1871. The trees consisted of Poplar, Elm, Ash, Lime, Oak, Horse Chestnut, and Beech, with stems varying from 5 ft. to 8 ft. in circumference; all were pollarded from 18 ft. to 20 ft. above the ground, and the branches, both large and small, were shortened in at the same time, so as to give them a proper outline. During the following summer and autumn, young shoots were freely produced over the cut branches, even on those of the Beech, which I never expected would submit to such an operation. All these trees are now finely shaped and healthy, and, with the exception of the Beech, all have made rapid progress, and look as if they would not interfere with each other or with the public road for years to come. This species of pollarding is often very desirable in cases where long rows of comparatively young trees, of one or more kinds exist, either along a wall surrounding a park or roadside, or even round a villa garden or public square. In such cases, if each alternate tree be pollarded and branch-pruned, no matter what the species may be, such cut specimens will very soon make trees with good outlines. In a few years the alternate specimens can be similarly treated. By this arrangement we get rid of high hedge-row trees, which generally spread and overhang walls, such as Elm and Lime.

Many are apt to plant thickly in the neighbourhood of their houses, in order to produce early shelter. This is often a mistake, as I have frequently observed that trees, both for avenue and plantation purposes, when not too thickly planted, but judiciously topped and branch-pruned when young, so as to secure a proper shape, stand the wind better than trees which have been allowed to go on unpruned till they have acquired a large size. This particularly applies to the Norway Maple, Plane, and Elm. If ornamental trees are to stand amongst Evergreen shrubs, their stems ought to be pruned; but if to stand singly on Grass, the natural outline of such trees should be carefully preserved. When the site of a new mansion is first determined on, the distant landscape effects to be obtained from it are often a source of much discussion. When finally settled the building goes on, and the ground laid out with trees, at the time in all probability small. The planting and choice of the trees are generally conducted without much reference to vistas or views to be afterwards obtained; on the contrary, they are left to be thinned out as may be needed. Time goes on, and often with a change of proprietor; the trees gradually enlarge, and for many years their progress is a matter of more consideration than the interception of the views from the mansion, which itself gets hid under

a dense mass of foliage. If openings were originally left and filled up, such openings can be restored by pruning and thinning the branches, and these can be annually gone over and dressed; but where a dense, close mass has been allowed to grow up, the removal of certain trees will be absolutely necessary. In some cases stem-pruning may be safely performed so as to allow vistas to be opened up below the upper spreading branches. It may happen, too, that a distant tree may interfere with the carrying out of such views, and in such a case it may be removed; but should the removal happen to introduce any unpleasant object, the top only need be taken off and the remaining portion rounded over so as to give a clothed appearance to the landscape. Forming vistas or views is perhaps one of the most interesting works with which a landscape gardener has to deal, and it is amusing to observe the amount of zeal shown by some proprietors when one or two vistas have been successfully opened up. When once infected with picture-making of this kind they become constantly on the outlook for subjects on which to experiment, and when this is the case neither shrub, tree, nor branch, will stand in their way, notwithstanding the doubtful feeling which was exhibited when the first branch came down. After the *débris* attending the removals, and the requisite dressing given to the trees and shrubs have received attention, such places become the chief resort of visitors. When mansions stand within wooded grounds, a mile or so from the sea, the judicious formation of vistas and views is absolutely necessary. When arranging vistas, which are to be opened through plantations, it is desirable to have such openings made along a carriage drive or road, but, instead of a narrow cut, they should be made wide towards the drive or walk. Should a good tree stand in the foreground, branch-pruning the stem may be resorted to, so as to have the views below the upper branches; a few evergreen shrubs may be planted on each side, and the surface of the ground between the drive and the fence should be Grass. All such finishings, together with numerous others, will readily suggest themselves to the operator while such works are in progress.

ROMNEYA COULTERI.

This handsome Californian Poppywort has recently flowered with me for the first time. The plants were raised from seed during the summer of last year, and were kept in a cool house during the winter, though they are capable of resisting a few degrees of frost in dry soil. Under glass the plant is almost, if not quite, an evergreen, and when turned out into the open border in May, the stems soon reached a height of 2½ ft. to 3 ft., producing a single flower at the summit of each, which developed somewhat slowly, and expanded about the middle of July. The petals, six in number, arranged in two series, are of the purest white, broadly fan-like in form and slightly fragrant, the flowers being quite 4 in. across, and continuing expanded throughout the day. Notwithstanding the heat of the weather, they remained open from three to four days, proving that they are somewhat less fugacious than many plants of the same Order. The earliest stems have been followed by a succession of strong shoots from the necks of the plant, and these promise to yield several flowers; it is, however, unfortunate that the numerous lateral shoots with which the stems are furnished do not at present exhibit any disposition to develop flower-buds, but as the roots become older they will doubtless furnish their contingent. It evidently prefers a good deep garden soil, with liberal supplies of moisture in dry weather, and when cultivated under such conditions is highly ornamental, even when not in flower, owing to its handsome, pinnatifid, glaucous foliage; the entire plant is, indeed, as glaucous as the Eschscholtzia. Among my seedlings I observed some with slender, weak stems, and foliage more deeply cut, with narrower lobes. It is noteworthy that all the plants of this habit have obstinately declined to flower, but they may possibly do so in future seasons. The Romneya is certainly a true perennial, and may doubtless be easily preserved from year to year in a cold frame. I do not think it can be successfully treated as a perfectly hardy perennial. W. Thompson.

Ipswich.

FLORAL DECORATIONS FOR SEPTEMBER.

Amongst September flowers (after the profusion which we had in July and August) there are none which give more pleasure than the autumnal blooms of Roses if well arranged. To this end plenty of Rose foliage is indispensable, but both the buds and the leaves require the aid of wires if they are intended to last without drooping. There is, however, a still worse habit that many of them possess than drooping, and that is, dropping their petals; some kinds do this more than others. Upon this subject Mr. Baines, in describing Mr. George Paul's Roseries at Cheshunt in the pages of a contemporary, has published some very pertinent remarks, which I cannot do better than transcribe:—"It is not a little tantalizing, after arranging a vase of Roses, to find most of them fallen to pieces the day after. The names of a few that will stand may be of use. Some of the most persistent when cut, as well as the most beautiful, are the Bourbon de la Malmaison, Maréchal Niel, and Celine Forestier, Noisettes, and such light-coloured Teas as Gloire de Dijon, Madame Falcot, Madame Villermoz, Catherine Mermet, Niphetos, Devoniensis, and alba rosea; of red Teas, Souvenir de David will stand well. Amongst hybrid perpetuals, Camille Bernardin, Prince Camille de Rohan, General Jacqueminot, Duke of Edinburgh, Fisher Holmes, Jules Margottin, Victor Verdier, Henri Ledechaux, Annie Laxton, and Princess Mary of Cambridge; with the old Cabbage for scent, and to many the most exquisitely perfumed Rose in existence, the small blush Stanwell Perpetual, a variety too old to find a place in most catalogues. It is the first to flower in spring, and almost the last in autumn. Any one who grows these, on giving a bunch to a friend, need not fear being afterwards told that they dropped their petals next day." To these observations I would add that the persistence of Roses in water is materially increased by cutting them very early in the morning, and by choosing buds not more than half expanded.

The following flowers will be found available during the present month:—

Blue—Gentianella, Larkspur, and Myosotis.

Purple—Aster, Heliotrope, Hollyhock, Larkspur, Phlox, Syrian Hibiscus, and Verbena.

Mauve—Aster, Dahlia, and Heath.

Pink—Antirrhinum, Aster, Begonia, Bouvardia, Carnation, Dahlia, fancy and Zonal Pelargoniums, Fuchsia, Gladiolus, Hollyhock, Lilies, Oleander, Phlox, Rose, Syrian Hibiscus, Verbena, and Zinnia.

Crimson—Antirrhinum, Aster, Bouvardia, Dahlia, Everlasting Pea' Hollyhock, Phlox, Rose, Verbena, and Zinnia.

Maroon—Dahlia, Hollyhock, and Zinnia.

Scarlet—Begonia, Bouvardia, Carnation, Dahlia, Gladiolus, Lilies, Poppy, Salvia, Tropæolum, Verbena, Zinnia, and Zonal Pelargoniums.

Orange—Calceolaria, Carnation, Dahlia, Hollyhock, Lilies, Marigold, Rose, and Zinnia.

Yellow—Antirrhinum, Calceolaria, Dahlia, Eschscholtzia, Hollyhock, Marigold, Rose, and Zinnia.

White—Antirrhinum, Aponogeton, Aster, Begonia, Bouvardia, Carnation, Dahlia, Eucharis, Fancy Pelargoniums, Gardenia, Heath, Hollyhock, Lilies, Myrtle, Phlox, Syrian Hibiscus, Spiræa, Stephanotis, Tuberose, and Water Lily. W. T. T.

New Lily at Heatherbank.—The apparently new Lily mentioned, in describing Mr. Wilson's collection in The Garden of last week (see p. 254), as being then in bud has since that time expanded its flowers, which are remarkably handsome and peculiar in form, and of extremely vivid colouring, blending from bright orange-yellow to bright scarlet, freckled with a deeper tone of the same colour. The petals are of more than usual length, and as they only turn back till they assume a nearly erect position, they present a somewhat flame-like and unusual appearance. The flower approaches more nearly to that of L. superbum than any other well-known species, but has not the same strongly-marked Martagon character in the complete curling back of the petals and sepals. The foliage, too, is altogether different, appearing in alternate broad leaves of full dark green somewhat Pear-shaped, while that of L. superbum occurs in regular whorls, after the manner of a large section of the Martagon family. The bulb was purchased by Mr. Wilson under the name of L. Carolinianum, a name given in the "Botanical Magazine" as one of the synonyms of L. superbum, but the Lily which has just bloomed is evidently not the one there alluded to, as the spotting of the flowers is of an entirely different character, while the foliage in no way resembles that of any of the varieties of L. superbum. It may also be observed that while L. superbum is an early-flowering species, the new Heatherbank Lily will evidently prove to be an autumn-flowering kind.—H. N. H.

THE FRUIT GARDEN.

SELECTING APPLES AND PEARS.

Before the planting season has arrived, it will be well for those who intend carrying out this operation to take note of such varieties as have been proved to succeed in their particular locality—for no greater mistake can be committed as regards fruit culture than planting too many varieties. It is an error into which even experienced cultivators are often led, not only with Apples and Pears, but also with all kinds of fruits; for instance, many of the newer kinds of Grapes, that promised to supersede all other kinds, are found to be so variable in character as to be now only grown in some places as novelties, and exactly the same results occur in the case of Pears. Really first-class Pears, such as Knight's Monarch, succeed admirably in some localities, and in others are scarcely ever eatable, and many other kinds are equally variable—not only as regards quality, but as respects certainty of cropping, for even in favourable seasons there are plenty of unfruitful trees to be found, from no other cause than that they are unsuited to the locality or position in which they are planted. Amongst numerous varieties planted here some ten or twelve years ago as espaliers quite one-third have been or will have to be re-grafted or wholly removed before the collection can be considered satisfactory. Although all were planted and treated exactly alike, some refused to make wood; others grew satisfactorily, but produced worthless fruit, although the same kinds grown against walls are annually good. Few things are more vexatious than finding that trees after reaching a remunerative age must be re-grafted or replaced before any serviceable fruit can be got from them, and as long as the rage for novelties and collections continues, this is likely constantly to occur. Indeed, I feel certain that a succession of fruit is more likely to be obtained from a dozen varieties of really good free-bearing kinds than from double the number selected without skill. There are usually too many mid-season varieties planted that all ripen at one time, whereas it is good early and really late-keepers that are most profitable. Little fear need be entertained about the mid-season supply if the early and generally surest-bearing kinds be made the most of by gathering portions of the crop in succession. The scarcity of fruit this year is by some attributed to the trees being heavily laden last year. Doubtless, this is the case with trees left to take care of themselves, and allowed to carry all fruit that sets. But I, by no means, think that bearing a fair crop of fruit one year is at all likely to prevent a similar crop being obtained the following year; for fruit trees of all kinds grown wholly under glass are expected to fruit with certainty annually—and they generally do. But even out-of-doors our best crops of Apples and Pears are on trees that had the best crops not only last season, but even in former years; in fact, it is not uncommon to find trees of such sorts as Keswick Codlin, Cellini, Hawthornden, &c., that are looked to for crops as a rule, failures being the exception, and what holds good in regard to a certain class of trees ought to hold good in all under proper treatment. The partial or entire loss of a crop from some particular tree is, however, not so noticeable in large as in small collections; for in the former, the abundance on suitable kinds goes far to make up for blanks occasioned by uncertain croppers. Many of the latter bear fruit that is excellent in quality, and therefore might be grown where space is no object. Gansel's Bergamotte, for example, is a really splendid Pear, but it is wholly unsuitable for those who have but limited wall space, inasmuch as this variety does not produce a good crop once in seven years; in fact, like the Gloria Mundi Apple, it does not take long to count the number of fruit even on a good-sized tree in average fruit seasons. Many of the numerous sorts of fruit which one sees in trade lists are really good in some situations; but soil and other matters vary so much even in the same locality that selection, guided by experience, becomes necessary. I have found the following Apples and Pears generally succeed under most circumstances; and although there may be better kinds for particular places, I should not hesitate to plant any or all of them where satisfactory results are desired. Among kitchen Apples, I would recommend Keswick Codlin, Hawthornden (new and old), Cellini, Lord Suffield, Dutch Mignonne, Tower of Glamis, Wellington, Northern Greening, Sturmer Pippin, Rymer, and Manks Codlin. Among dessert Apples, Cox's Orange Pippin, King of Pippins, Ribston Pippin, Baxter's Pearmain, Pitmaston Nonpareil, Early Harvest, Blenheim Orange, Golden Pippin, Court of Wick, Court Pendu Plât, Old Nonpareil, and Golden Harvey are the best. Of Pears, I would take Jargonelle, Williams' Bon Chrétien, Louise Bonne of Jersey, Beurré d'Amanlis, Beurré Diel, Brown Beurré, Seckle, Forelle, Chaumontel, Glou Morceau, Marie Louise, Ne Plus Meuris, Beurré Rance, Joséphine de Malines, and Winter Nelis; kitchen kinds may consist of Verulam and Uvedale's St. Germain. James Groom.

Henham.

Early Plums.—All of us, I am sure, must feel indebted to Mr. Ewing for his remarks (see p. 215) on the Plum crop, but especially for his references to the stocks on which the trees are grafted; could we but get cultivators to give us their observations and experience as to the effect of the stock on varieties generally, it would be most interesting as well as instructive. Mr. Ewing says that the Blue Perdrigon is the earliest; my first gathering of that variety was on the 31st of August. I have no date as to my first gathering of Rivers' Prolific, but it is quite four or five weeks earlier. I do not preserve dates as regards the times of gathering, but I certainly have not had it so late before. It is generally from ten to eighteen days, or as near that as I can remember, earlier than the Perdrigon. I do not know Hubbard's Early Prolific, although I cultivate some 150 varieties of Plums. My first is St. Etienne; Rivers' Early Favourite (and a good Plum it is) is my second; Rivers' Early Prolific third; then as to a fourth, I cannot speak with certainty, for Plums vary so much, even more than a week. For example, this year I may have July Green Gage ripe a week before Brandy Gage, but next season Brandy Gage may be even a fortnight in advance of July Gage; as a rule, however, Brandy Gage is first, and then there is Lawrence's Gage, which varies just as much; Abricotée de Braunau varies, but not so much, and also Early Green Gage; but perhaps, after all, I ought to have placed Early Mirabelle fourth (and a delicious little Plum it is). Early Orleans, Chapman's Prince of Wales, Mons. Grosse Surpasse, and De Montefort are all early Plums. I omitted Impériale de Milan (this is almost as early with me as Rivers' Prolific); I ought to mention Prince Engelbert (this is a fine Plum, and rather early with me). What I desire to convey is that one cannot speak with certainty as to the exact period at which very many Plums will ripen. One year one variety will come in first, and the following year another kind, but it must be remembered that my trees are standard bushes or pyramids.—George Lee, *Clevedon.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Top-dressing Orchards.—The most perfect treatment for an orchard to give vigour of growth is, according to the "Country Gentleman," to cultivat the surface in connection with a yearly moderate application of manure. Heavy top-dressing, even without cultivation, will produce decided results. We visited an orchard which had for years received an abundant top-dressing. All the manure that could be spared went to the orchard. The mellow surface could be kicked up with the boot among the grass. The trees bore heavy and excellent crops.

Autumn and Winter Grapes.—I wish to have a good supply of Grapes from August to January, and I am about to erect a vinery about 50 ft. by 15 ft. What kinds would you recommend me to plant, and should I divide the range into two or three compartments?—Muscat.—[Divide the range into two compartments, and plant one with Black Hamburgh and Duke of Buccleuch, and the other with Muscat of Alexandria, Gros Colman, and Gros Guillaume. The three last-named Grapes require more heat than the two former ones, and provision should be made for this.—D. T.]

James Veitch Strawberry.—While gathering this Strawberry this season curiosity prompted me to weigh 1 lb. of the heaviest fruit, and I found that it took little more than twelve to make the pound. This, I ("J. S.," in the "Gardener") think, is without doubt the largest Strawberry grown, and is one which is deserving of a place in every collection. It is a well-known fact that some varieties do well in some localities that will not succeed in others; but where President does well, James Veitch may be expected to succeed well also. It resembles President a good deal in its habit of growth, and is very prolific, having handsome, highly-flavoured fruit, which come into use between President and British Queen.

Quince Stocks.—Looking over some old publications, I find that the variety of Quince for stocks upon which to work the Pear was at one time quite a mooted question. The Pear (or Paris) Quince was discarded by all, yet for a time the Portugal took the lead, until it was found that the Angers was nearly, if not quite, as free a grower, and that it could be propagated much the most rapidly of any variety. 300 years since, as I read, most of the stocks on which the Pear was worked were grown from seeds, and the Portugal was mainly the variety from which seed was taken; but as it was found that growing from cuttings gave more regular and even growth, and as the Angers was most sure to form roots, that variety (says the "Country Gentleman") did, and does now, take precedence.

NOTES OF THE WEEK.

The Vineyard at Castle Coch.—This experiment, originated by the Marquis of Bute at Castle Coch, and carried out so well by Mr. Pettigrew, is thriving apace this year, the Vines being very healthy and the wood well ripened. Being only eighteen months planted it is of course too soon to expect any noticeable result in fruit. In all, 2500 Vines have been planted, and preparations are being made to extend the Vineyard. It is planted and managed after the fashion in the best-cultured Vineyards in northern France.

Heavy Bunches of Grapes.—At the International Horticultural Show which took place the other day at Dundee, there were no 25-lb. or 26-lb. bunches of Grapes, as there were last year at Edinburgh; Mr. Curror, however, had a bunch of Trebbiano which weighed 16 lb. 2 oz., and Mr. Dickson a bunch of White Nice, 14 lb. 2 oz. Mr. Dickson also showed the heaviest bunch of Black Grapes (Barbarossa), which weighed 10 lb. 2 oz.; Mr. Hammond, Carlisle, also had a bunch weighing 10 lb.

Golden-fruited Blue Passion-flower.—In favourable seasons this fruits profusely near London, and many of the pretty villa residences in its south and south-western suburbs are now draped with wreaths of glossy leaves, and the blue-rayed flowers of this plant, on which soft golden egg-shaped fruits shine very conspicuously. Two houses in the Brandenburgh Road, Turnham Green, are covered with this plant; and one of these is just now a sight well worth seeing, being ornamented with hundreds of fruit of this useful Passion-flower.

Lagerstrœmia indica.—A specimen of this charming Chinese shrub might recently have been seen in beautiful condition in an intermediate house at Coombe Abbey, where it forms a bush nearly 5 ft. in height, each shoot being terminated by a cluster of rosy-lilac, elegantly-crisped flowers. Some twenty or thirty of the strongest growths on this plant bore panicles of inflorescence from 15 in. to 18 in. in length, the effect of which was most striking. The specimen in question is planted in a brick pit, and its young growths when ripe are cut back every season like those of a Gooseberry bush. Although long introduced to our gardens, this fine-flowering shrub is rarely seen in such perfection as that just recorded.

Pomegranates in Battersea Park.—These have been very effective this season, plunged here and there on the turf, where their bright coral-red buds, and glossy olive-green leaves are seen to excellent advantage in contrast with their surroundings. Though an Oriental plant the Pomegranate is hardy in our Southern counties, and not unfrequently, as at Kew, produces fruit on sunny walls. The chief beauty of the plant, however, consists in its coral buds and flowers, which render it well worth a place on sunny terraces or other walls in flower gardens. It grows and flowers well on the palace walls at Fulham; and a vigorous specimen of it 8 ft. or 10 ft. in height, on the boundary wall in the Chelsea Botanic Garden proves that it is not unsuitable for suburban gardens.

Late Dessert Cherries.—In most gardens the dessert Cherry season ends at the beginning of August, but there is no reason why it should, inasmuch as Cherries may be had in perfection until October or even November. At Frogmore Late Dukes and Napoleon Bigarreau are now ripe or ripening, and at Chiswick several of the best late varieties are at present in excellent condition. During the past week we have seen fine fruit of the following varieties at Frogmore, Chiswick, and elsewhere, viz., Napoleon, Late Duke, Bigarreau de Heldesheim, Büttner's October, Coe's Late, Carnation, Downer's Late Red, Florence, Belle de Septembre, and Late Bigarreau. Careful shading with tiffany or canvas blinds is necessary to keep off wasps and birds. North walls in our gardens could not well be made better use of than by being covered with the finest varieties of late dessert Cherries.

Camellia Garden in Dorsetshire.—"Salmoniceps" says: Your note (p. 263) concerning the large Camellia at Killarney induces me to notice a Camellia garden, which it was my good fortune to visit last spring, viz., that at South Lytchett House, near Poole. The bushes here grow in the greatest luxuriance, and flower profusely. At the time of my visit (the beginning of May) the bloom was past its height, but there remained enough to form a very striking and unusual garden scene in this country. I did not measure the height of the bushes, but they appeared to equal that at Killarney in size. A hedge formed entirely of Camellias at one end of the grounds seemed to stand about 8 ft. high. Besides the Camellia shrubberies, there are single standard bushes, and bushes trained against walls with and without glass coping, also a large Camellia-house. In short, Camellias occupy in this garden the same honourable position that the Rose does in other places. One is only tempted to regret, in the midst of so much beauty, the absence of perfume.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Of autumn-flowering Campanulas, such as C. carpatica bicolor, with delicate white lilac-shaded flowers, and the dark purple C. celtidifolia, we have noticed several plants on rockwork in good condition. Of all the species, however, the most stately is the azure-blue C. pyramidalis and its white and lilac varieties, which are just now flowering freely in the open borders; grown in a pot, and treated as a sub-aquatic, in a sheltered position in the open air, C. pyramidalis is one of the most effective of all decorative plants, and it is one which also makes a suitable ornament for a cottage window, in some of which in country districts we have seen it grown with great success. Erect-growing Veronicas of the V. spicata section are now very handsome, one of the best being V. spicata pumila corymbosa, a variety which bears dense branching panicles of bright blue flowers. The common white variety is also very effective, forming as it does vigorous masses fully 2 ft. in height. Colchicums are just now everywhere very lovely, their bright rosy-lilac or purple-tinted flowers peeping up here and there among stones and bare earth. We should like to see these pretty autumn flowers planted in greater abundance in our gardens than they now are, for if these and autumn Crocuses were planted on carpets of Sedum glaucum and S. lydium, or any other dwarf and fresh-looking plants, they would bestow an amount of gaiety on our autumn gardens which they do not at present possess. One of the prettiest of all the Labiates now in bloom is the spicate Dracocephalum virginianum, which is now profusely covered with rosy-lilac flowers and rosy-purple buds. This plant will remain in bloom for another month or even longer, and is so handsome, that it should find a place wherever there is an inch or two of deep moist soil to spare. Mœhringia muscosa, one of the freshest of all carpeting plants, is now very pretty on a rockery at St. John's Wood, each patch being studded with pearly-white flowers. Among the Composites we find some of the most stately and handsome of all autumnal-blooming herbaceous plants. Helenium autumnale is very pretty in Messrs. Henderson's Nursery, forming tufts 2 ft. in height, each shoot being terminated by a cluster of golden-rayed flowers and yellowish-green buds. Coreopsis grandiflora is yet in great beauty, and its flowers, which are elegant in form, and borne singly on long, slender stalks, are admirably adapted for cutting. One of the most noble of all the Composites now in bloom, however, is Pascalia glauca, a plant which bears bright golden flowers 4 in. in diameter set off by a dark purplish-brown or nearly black disc. This plant, which grows 5 ft. in height and as much in diameter, is so showy that no collection can be considered complete without it. The large double Sunflower, exhibited last year for the first time, and now flowering in Mr. Barr's grounds, is much more showy than the old brown-disked, single type. Each flower is as large as a dessert plate, and forms a semi-hemispherical dense cushion of golden, tubular florets. Convolvulus Scammonia is now in flower in Mr. Ware's grounds, and at Mr. Parker's the rosy-lilac Sedum spectabile is used with excellent effect both in clumps and as an edging plant. It succeeds perfectly in any well-drained, rich soil, and is one of the most precious of all autumn-flowering succulents; it is one, too, which might be used for massing in flower garden arrangements with the best results, as it is effective from the time it appears above ground in spring until it flowers in autumn. The prettiest of all aquatics now in flower are Calla palustris, the white Water Lily, and the ever-blooming Aponogeton distachyon. Of other kinds of plants the following are now in flower, viz., Epilobium sericeum, Geranium Wallichianum, Statice umbrosa alba, Asclepias tuberosa, Gypsophila glauca, G. paniculata, and several others, Chelone speciosa and C. obliqua alba, Tournefortia heliotropioides (a free-flowering plant of Verbena-like habit), Tropæolum speciosum, Lobelia syphilitica, Polygonum amplexicaule, Tricyrtis hirta, Zephyranthes candida, Stenactis speciosa, and Polygonum cuspidatum crispulum. Delphinium Belladonna is now lovely, its soft cœrulean flowers being most useful for cutting; Cyperus longus is now very graceful associated with water margins in company with Typha latifolia, T. minor, and the common Reed (Arundo Phragmites).

Drummond's Cone-flower (Rudbeckia Drummondi).

Variegated Alstrœmeria (A. versicolor).

Stokes's Aster (Stokesia cyanea).

Vine-leaved Kitaibelia (K. vitifolia).

Tartarian Statice (S. tatarica).

Ivy-leaved Hairbell (Campanula hederacea).

Ordinary Border Chrysanthemum (C. indicum).

Dwarf Perennial Catchfly (Silene Schafta).

Marsh Hibiscus (H. palustris).

Pickerel-weed (Pontederia cordata).

Graceful Sunflower (Helianthus orgyalis).

Woolly-herb (Tricyrtis hirta).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

HARDY FLOWER GARDENING.

A correspondent (see p. 213) asks the following question, viz.:—"What good bedding plants can be raised from seed in the spring?" This is certainly an important question as regards amateurs, who may have only limited accommodation in the way of glass structures. There are doubtless various species of hardy perennial and annual plants both beautiful and interesting with which a good effect might be made during the summer and autumn. It is, of course, necessary that all plants intended to be used for beds, whether annual or perennial, should be continuous bloomers. An adherence to this necessary qualification will unavoidably exclude many otherwise desirable kinds, such as the Nemophilas, Clarkias, &c., while conspicuous among plants possessing the desired quality are the numerous varieties of perennial Phlox, more particularly those of Phlox decussata, an exceedingly beautiful tribe of hardy plants. The attempts made during the last few years to improve this desirable family of decorative plants have resulted in the production of numerous varieties possessing exquisite beauty, perfect form, and nearly every desirable shade of colour, from the purest white to the darkest purple, all of them being exceedingly well adapted for the purpose of furnishing the beds of the flower garden. Young plants, however, are found to be best suited for the purpose, as they flower in a comparatively dwarf state; to secure this the old plants should be cut down close to the surface of the ground at the end of the season, and this will have the effect of inducing them to throw up numerous young shoots during the early part of the following spring. These should be taken off as soon as they are 1 in. or a little more in length, and inserted as cuttings in pots filled with a compost of silver sand and finely-sifted leaf-soil, plunging the pots in a slight bottom-heat in a close frame, where they will root in the course of a few days; they may then be potted off singly in small pots, gradually hardened, and finally planted out in the flower beds in May, where they will come into bloom about the end of June or early in July, and during favourable seasons will continue in great beauty for the two succeeding months, or even longer. Annual Phloxes are also exceedingly beautiful, and suitable for beds. P. Drummondi violacea alba oculata is vigorous in growth, and flowers profusely; the blooms are large and finely formed, the ground colour being rich crimson or violet, with white centre, relieved by a rich violet disc or eye. Nothing among bedding plants can surpass this variety in beauty and effectiveness, and it continues to bloom throughout the entire season. P. Heynholdi has blooms of a bright scarlet colour, but it is less robust than the variety just alluded to. P. nana compacta coccinea is very dwarf in habit, and its blooms are of a bright fiery-red colour. There are also many other good bedding varieties in this section, including some with pure white flowers. Seeds of all kinds of Phloxes should be sown in pots or seed-pans about the end of March or early in April, and should be placed in a slight hot-bed, or in a close greenhouse, where they will soon vegetate; and, when the plants are large enough, they should be pricked into other pans, or they may be potted off singly, and will be ready to plant out in the flower-beds by the middle of May.

This treatment will also be found to suit many other useful annual flowers, whose season of blooming will extend over a considerable portion of the summer and autumn months—such, for instance, as the Dianthus Heddewigi and its numerous varieties; some of these produce double, and others single flowers, but all exceedingly beautiful, and generally they remain in good condition until the arrival of the autumn frosts. Tagetes signata pumila is a really fine bedding plant, with remarkably elegant foliage, producing a profusion of bright yellow flowers throughout the season. In many gardens this plant is made to take the place of bedding Calceolarias, being equally effective, and more to be depended upon, especially in dry seasons. Viscaria cœrulea is another beautiful annual, the blooms of which are of a light blue colour; it forms an effective bed, and during favourable seasons remains long in flower. Several of the dwarf annual Tropæolums are also useful as bedding plants, such as T. compactum coccineum, T. luteum, &c. A bed of double Zinnias likewise forms an attractive object in the flower garden. The flowers of these are now perfectly double and full, and of the most brilliant colours, ranging from pure white and yellow to dark purple and the brightest orange-scarlet. They are all continuous bloomers. There is, moreover a dwarf-growing variety, known as Zinnia elegans pumila, and the new Mexican variety, Z. Haageana fl.-pl. Scabiosa nana fl.-pl. is a dwarf form of the Scabiosa atro-purpurea, with large, full, double flowers of an almost black or dark maroon colour, and this forms a very rich-looking bed, and remains long in flower. Salpiglossis variabilis nana is a remarkably attractive annual, and one which remains in bloom for a considerable time. Its flowers are funnel-shaped, very beautifully veined, and the colours are exceedingly rich, comprising light blue, crimson, yellow, buff, &c. Such plants as the Lobelia speciosa and its varieties may all be treated as annuals; but in order to have them sufficiently strong to be planted out in May, the seed should be sown not later than the beginning of March. In all cases, however, where great nicety is desired, it is advisable to increase such plants by cuttings, as seedlings are liable to vary from each other in a greater or less degree. Some of the new kinds of Mignonette have, in addition to their well-known fragrance, sufficient beauty to entitle them to a place in flower gardens. Among the best are Victoria, nana compacta, and multiflora, the seed of which may be sown in pans, and afterwards transplanted; but it generally succeeds best when sown about the beginning of April where it is intended to flower. In addition to the above-named annuals, there are also the Ten-Week and other Stocks, all of which form beautiful, as well as delightfully fragrant, beds or groups in the flower gardens, as do also the various sections of improved French and German Asters, together with annual plants having coloured or ornamental leaves, such as the Amarantus melancholicus ruber, Perilla nankinensis, Pyrethrum Golden Feather, &c. To all these the treatment above recommended is applicable, viz.:—Sowing under glass in March or April, and planting out in May.

The above remarks apply chiefly to annual plants suitable for furnishing the beds of a flower garden. It may, however, at the same time be stated that there are many other useful perennial plants suitable for bedding so nearly hardy that even during very severe weather they only require a slight amount of protection, such as being placed in a cold pit or frame covered with a mat or similar material, while others being hardy require no protection whatever. To the latter class belong the Tritoma Uvaria, a noble plant, but somewhat late in coming into flower; yet either in the form of a clump or bed it is an imposing object. It may be readily increased by division or by seed, and the young plants thus raised will bloom during the second season. Gladiolus gandavensis and its many varieties also form effective groups, and the bulbs merely require to be planted in their respective beds in April, and to be taken up when the foliage has become decayed, and stored away during the winter. Most of the Fuchsias, including those with white corollas, make exceedingly beautiful and permanent beds, and may be allowed to occupy the same spot for years. When the plants are annually cut down by the first severe frost, the surface of the bed should be covered to the depth of 2 in. or 3 in. with sawdust or cinder ashes. Viola cornuta and V. cornuta alba, together with bedding Pansies of various sorts, are quite hardy, and easily increased by means of cuttings inserted under hand-glasses. The flowers of Veronica incana are also very beautiful, but they are produced somewhat early in the season, and do not last long. The plant is, however, valuable on account of its foliage, which is silvery-white, and it forms an admirable edging to beds of flowering plants. It is perfectly hardy, and is easily increased by division. The same may be said of Cerastium Biebersteini and tomentosum, Stachys lanata, Tussilago Farfara variegata, and Dactylis glomerata variegata. Gnaphalium lanatum, Santolina incana, Cineraria maritima and acanthifolia, Thymus marginatus aureus, and Golden Fleece may be readily increased by cuttings inserted under hand-glasses, all of them being quite hardy, as are also many succulents, such as Sempervivum californicum, Sedum acre aureum, and many others, now so extensively used and with good effect in the embellishment of the flower garden. Amongst the various other species of plants suitable for this purpose, and requiring only slight protection during winter, are the various varieties of bedding Verbenas and Calceolarias, all of which may be

struck in the shape of cuttings in a close frame during the autumn months, and wintered in cold pits with other plants requiring only slight protection from intense frost and shelter from heavy and continuous rainfalls, such as Echeveria secunda glauca, Centaurea ragusina, and others.

A judicious use of the plants enumerated above, and to which many more might be added, will, I think, go far to furnish the beds of even an extensive flower garden during the summer and autumn months with a class of plants at once interesting and ornamental, without finding it absolutely necessary to have recourse to the use of tender species, the preservation of which during even ordinary winters necessarily involves considerable trouble and expense.

Culford Hall. P. Grieve.

DWARF MARIGOLDS.

Amongst tender annuals African and French Marigolds have long held a prominent place, owing, doubtless, to their needs being small, and to their being very showy when in bloom. As cut flowers they are, although well adapted for the purpose, rather unsuitable, because of the unpleasant odour that arises from them when handled; this fault, however, does not detract from their usefulness as border plants. The most effective among them are the richly-coloured orange and lemon African kinds, the flowers, of a good strain, being almost as large as cricket balls, and so thoroughly double as to be perfect both in shape and quantity of material. Under the distinctive colours of orange and lemon there are now to be found some four or more hues added to the above bright yellow and golden tints, and further, it is found that the golden kind, which seems to have sported from the lemon, has much larger flowers, and presents altogether an improved character compared with its parent. These African Marigolds have a stout, hard seed that withstands damp better than the seed of the French kinds; and if it be sown in a cool house or frame about the middle of April, it will produce strong robust plants ready for planting out at the end of May. The stouter and more hardened the plants are the greater is the probability that they will withstand the attacks of slugs, as these depredators seem to have an especial liking for the succulent stems of tender annuals. The French Marigolds differ materially in habit of growth, and size, and colour of flower from the African kinds, but the latter are none the less decorative. It is the French variety that yields the beautiful striped flowers so much prized in the North at floral exhibitions, as in the cooler and moister climate of the North and Midland districts the colours are developed to a degree of beauty to which we in the south are strangers. That this feature is peculiar to the climate, and not to the "strain," is evident; for I have now plants raised from seed saved expressly from the finest northern exhibition kinds, and they are in no way better than those produced by plants raised from home-saved stock. Yet, whilst the Marigold possesses so much better colours under cool auspices, it is nevertheless one of the best plants to withstand drought, for it blooms profusely and with vigour in soils dry enough to produce entire collapse in all but hardy established plants. The old striped forms of the French Marigold grow to a height of about 2 ft., and have a branching and spreading habit, which often interferes with their neighbours, and they are specially liable to be broken by strong winds. Their growth, too, is rapid, and until the plants have attained their full vigour the successive branches rapidly hide the earlier flowers. This is a defect which is not compensated for until the plants are in full bloom in the autumn. I hope soon to show an improved strain of this Marigold that must eventually supersede in popular favour the tall varieties. The plants, when fully grown, are from 10 in. to 12 in. in height, and the same in diameter, forming a dense bush of foliage, above which the whole of the flowers are well elevated on 6-in. stems, this character being maintained throughout the season. In form and decorative beauty these are far in advance of the tall sorts, and will produce a really beautiful mass of flowers if used as bedding plants. This dwarf strain also furnishes a greatly-increased size of flower, one at least double the size of that of ordinary sorts. A large proportion is of the true-striped character, some are dark chestnut selfs, some yellow, some orange, and others a variety of tints in combination and otherwise. But they offer to those who grow the Marigold solely for exhibition one special advantage, inasmuch as they can be shown as pot plants. A stand of a dozen small Marigold flowers is not much to look at, but half-a-dozen of these plants well grown with some thirty to forty expanded flowers on them of fine form and substance deserve more than a passing glance. In such a case it would be necessary to relax the somewhat obsolete rule that limits competition entirely to striped flowers, as it shuts out equally beautiful self forms and entirely excludes variety. Allied to this dwarf strain is the excellent bedding variety known as aurea floribunda, a close, compact-growing sort, that produces medium-sized blooms of good double form and rich yellow colour in great abundance all through the summer. All Marigolds produce some single and semi-double flowers from the very best strains, and to make a good even bed it is necessary to flower the plants first, and then select the most double ones and plant them where they are to remain for the season. Marigolds stand heat and wet better than most summer-blooming plants. A. D.

White Autumn Wind-flower (Anemone japonica alba).—A half-wild bed of this plant is now blooming freely in Mr. Barr's grounds at Tooting, some of its stems being fully a yard or more in height. It is planted in a deep, strong soil, and is sheltered and shaded by a screen of young Lombardy Poplars. Thus treated it grows and blooms more vigorously than I have ever seen it elsewhere, and is far more luxuriant than clumps of the common pink-flowered type growing close beside it. Deep, rich soil and partial shade seem to suit this plant, and it would doubtless soon become naturalised beside woodland walks and drives. Its pure white single rose-like flowers and bright green foliage are quite spring-like in appearance, and are useful for decorating large drawing-room vases. —B.

Violas at Eglinton Castle.—Probably there never has been such a display of thoroughly well-cultivated and effective varieties of bedding Violas in one place as was to be seen at Eglinton Castle about the end of July, and they had all the appearance then of lasting in great beauty throughout the whole season. Circumstances had led Mr. Gray to make Violas a speciality in the flower garden, where his most effective varieties are seedlings of his own; one named Lottie was used in great numbers, and we thought it the best Viola of the lively violet-purple class we ever saw. It is a robust but compact grower, and throws its blooms well up on stiff stalks above the foliage. By far the best white grown in quantity was Purity, but Mr. Gray showed us a seedling in his trial ground which, for whiteness, substance of petal, and good habit, seemed to be perfection. Noticeable, also, in the trial ground, according to "The Gardener," was a lavender-coloured variety of very dwarf, compact habit, regarding the merits of which we have a high opinion; it is entirely new in colour among Violas, and when it can be planted in mass it is possible it may drive such plants as the dwarf Ageratums out of the gardens, at least in cool, moist localities. While speaking of Violas, we may remark that the climate of Chiswick is not suitable for testing this flower; it is too hot and dry.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Renovating a Bad Lawn on Chalk (see p. 260).—There is only the one remedy, and that is to remove the chalk from the portion of the lawn affected, break up the bottom, and replace the chalk with good soil. This is an instance of the importance of taking care always to preserve the top soil in operations of this kind. Every spadeful should be preserved and kept for the surface.—W. H.

Pelargonium, Leamington Lassie.—This Pelargonium received a first-class certificate when shown. It is compact and robust in habit, and flowers freely, throwing up large trusses of semi-double, lively pink flowers on sturdy stalks well above the foliage. It was (according to "The Gardener") raised by Messrs. Parsons & Co., of Ranelagh Gardens, Leamington. Like all double and semi-double Pelargoniums, its individual trusses of bloom last a long time in perfection, rendering it an excellent variety for pot culture.

Sanders' New Dwarf White Candytuft.—A Candytuft white as snow, 3 in. to 6 in. high, the whole forming a close tuft from 15 in. to 18 in. across, the flowers just enough separated here and there to give a glimpse of verdure to relieve the white, such is the little variety bearing this name. Assuming that the plant is a fair sample of the stock, it is the best white annual for small beds or front rows that I have seen. The flower-heads are from 2 in. to 3 in. across, and are composed of a great number of individual blossoms, proceeding from six to eight separate centres. This peculiar arrangement of the flowers gives them a comparatively even, flat appearance, and assures a long continuance of bloom.—D. T. F.

Bed of Cape and Scented-leaved Pelargoniums.—In an old garden at Castle Ashby planted with sweet-scented plants is a bed containing the following kinds of Cape and scented-leaved Pelargoniums; the interesting flowers produced by some of the smaller growing varieties are extremely rich in colour and very beautiful. Among them are Pelargonium echinatum, maculatum, cormæfolium, magnistipulatum, inodorum, grossularioides, citriodorum, citriodorum crispum, incisum, Shrubland Pet, quercifolium, Blandfordianum, monstrosum, denticulatum, capitatum, Bethalina, cordatum, acetosum, papilionaceum, malvæfolium, stenopetalum, ternatum, grandidentatum, fragrans, abrotanifolium, tomentosum, viscosissimum, Lady Plymouth, pumilum, ignescens, glutinosum, scabrum, gibbosum, radulatum, glaucum, ionidiflorum, ramosissimum, and sisymbrifolium.—G. B.

THE INDOOR GARDEN.

CENTRADENIAS AND THEIR CULTURE.

These are pretty dwarf-growing plants belonging to the Melastomads. They are especially adapted for those amateurs who have only the convenience of a small stove, as they can be grown and flowered well in 6-in. or 8-in. pots. The flowers are small, and individually of short duration, but they are produced in quantities successionally for many weeks; the leaves are long and narrow, proportionate in size to the plants, deep green above, and violet or deep red on the under surface: in this latter respect the oldest introduced species, C. rosea, is the darkest. The leaf-colouring renders this variety particularly useful for cutting in the winter to mix with flowers, as the leaves retain their colour for a month in water, and although requiring heat to grow and flower them, the leaves will retain their beauty in a room with little or no warmth. Used in this way, altogether independent of the flowers, C. rosea is one of the most serviceable plants that can be employed for decorative purposes, its dwarf compact habit adapting it for standing upon shelves near the glass, in which position it receives the greatest amount of light, which is quite indispensable to induce the free opening of the flowers; for if Centradenias be placed at a distance from the glass, and at all darkened by the shade of other plants, or in a house or pit that is dark, the blooms fall off without opening; owing to this many persons have been so disappointed with them as to give up their cultivation, affirming that it was through the absence of sun in the winter that the flowers drop unexpanded, whereas it was by not placing them where they could receive sufficient light, coupled with an overwatering of the soil at a season when the root-action is very slight; neither are these the only Melastomads that are thus affected, as several of both the stove and green-house species are subject to the same drawback if they do not receive sufficient light; of this the strong-growing Medinilla magnifica is an example; it often casts its flowers before they open, if brought into bloom early in the spring, and placed where it does not receive its maximum of light.

Centradenias will grow in either peat or loam, or a mixture of both, but I have always found that any plant that is at all subject to throw off its flower-buds is more liable to do so when grown in peat or a mixture of peat than when loam alone is used, at once pointing to the greater strength imparted by loam than peat, although the latter generally produces freer growth with a larger development of the leaves, as also imparting to them deeper colour. They root freely from cuttings at any time during spring or summer, when the wood is in a half-ripened state, but it is better to propagate them early; if the cuttings be put in during March in small pots, drained and filled to within an inch of the rim with a mixture of one-third sifted loam to two-thirds of silver sand, adding 1 inch of sand to the surface, they will root in a fortnight or three weeks in a temperature of 70°, keeping them moderately confined but not too close, or the leaves are liable to damp; when rooted, gradually expose them to the full air of the house, and when the little pots are fairly filled with roots, shift them into others 4 in. in diameter, using good turfy loam pulled to pieces about the size of Acorns, with one-fifth of sand added; place them on a front shelf, where they will receive plenty of light, but shade slightly when the sun is powerful. It is not well to grow them in too much heat, an intermediate temperature of 65° in the night, with 10° more in the day, through the summer is better than if a higher temperature be employed, which only produces weak growth, a condition by all means to be avoided. The natural habit is such as to need little or no support, a single small stick to the main stem being all that is required. Pinch out the points of the leading shoots to induce them to break back and keep compact and bushy. It may be found necessary to repeat this two or three times during the summer. Give them more air than the majority of stove plants require. This may be managed without interfering with the requirements of other subjects grown in the same house by placing them near where air is admitted; but although benefited by a free circulation of the atmosphere, they must not be subjected to a draught. Syringe them overhead every afternoon through the growing season, closing the house early enough to raise the temperature considerably for an hour or two. Give plenty of water at the root. By the beginning of July they will want moving into the pots in which they are to flower; these should be from 6 in. to 8 in. in diameter, not larger than the last named, for it is essential to have the soil thoroughly filled with roots before the autumn is too far advanced, otherwise the wood does not become sufficiently ripe for the production of flowers to an extent the plants are capable of when well matured. Give them at this shift soil similar to that in which they were last potted, and continue to treat in other ways as before until the beginning of September, when they will not need to be longer shaded or syringed, after which give a little more air, thereby gradually causing a cessation of growth. As the days get shorter reduce the temperature by degrees, keeping it from 55° to 60° in the night with a slight increase in the day-time. When the flower-buds begin to swell place the plants as near to the glass as possible without touching it, which arrangement will not only have the effect of preventing a disposition to premature dropping, but the blooms will open brighter in colour. At this time an application of clear manure-water of moderate strength once a week will benefit them. By keeping a portion of the plants somewhat cooler than the others a succession of flowers can be had, using for cutting those that have been longest blooming. There is no necessity for any reluctance in cutting the branches to whatever extent they may be required, for it is much better to grow on a fresh lot of plants each year, using the old ones for decorative purposes in a cut state as above indicated, merely retaining a plant or two from which cuttings should again be taken in spring.

Most insects that infest stove plants will live on Centradenias; the regular syringing recommended through the growing season will generally keep down red spider, aphides, and thrips, but when the syringe is found insufficient these can be destroyed by dipping in a weak solution of insecticide. If mealy bug or scale get established on the plants and they are neglected for a time, it is difficult to eradicate them without injuring the leaves; the best means for the removal of the former is laying the plants on their sides and syringing freely with tepid water, using a small, soft brush for the scale.

C. rosea is a native of Mexico, whence it was introduced over thirty years ago, and at one time was much more generally cultivated than at present, the increasing demand for cut flowers of a showy description having put it in the shade, few having tried it for the purpose for which it is so well adapted, viz., mixing its branches with flowers with which the colouring and form of the leaves contrast so well.

C. floribunda is from Guatemala; it has larger flowers, purplish-violet in colour, and produced in great profusion. The leaves of this plant are also stained with purple on the under surface. There is a third kind in cultivation, C. grandiflora, requiring similar treatment, but it is not so desirable a plant as the others.

T. Baines.

Grafting Seedling Pelargoniums to induce Variegation.—Having noticed the effect of grafting the variegated Acers on the green varieties, and also the occasional breaking of various other plants into variegation, both hard and soft wooded, after being grafted with a variegated scion, I was induced to try the effects of grafting on Pelargoniums. I raise about 100 seedlings every year, and as the seed is the result of careful crossing, some very good varieties are obtained. Early in May I inserted a few grafts of a valueless seedling silver tricolor at the base of some broad-zoned seedlings—plants that had been cut down but which had not "broken" colour, at the same time pinching out the points, and, with one exception, they all "broke" silver tricolors, although in many cases the scion died out after it had united, owing to the vigour of the heads. As soon as I saw the effects of the grafting, I worked some fifty well-shaped green Zonals belonging to the tricolor section, and, with two exceptions, they have all broken colour within two months after grafting, a result that I should never have obtained in the ordinary manner. My plan of grafting is to take a side shoot of moderately hard growth, and leaving a small heel attached to it, insert it in a cleft about 1 in. from the soil, binding the graft together tightly with raffia, and in about six weeks the scion becomes firmly united; the head of the plant is then removed about 8 in. above the scion, and, in the majority of cases, in a week or so from two to a dozen variegated "breaks" appear, which, when large enough, are

taken off, and struck in sharp sand and loam—one part fibrous loam to five of silver sand; when well rooted, the cuttings are potted off. As regards the effect of grafting, I may mention that two cuttings off the same plant were reserved for standards, and out of curiosity I worked one with a scion of the silver tricolor P. picturatum, and the other with the golden tricolor P. Sophia Dumaresque; both broke colour, the one silver and the other golden tricolor, a fact which shows that the colour obtained is due to the introduction of the sap of the particular scion used into the stock, although the exact form of either leaf or variegation may not be imparted to it. It is, however, useless to attempt to induce plants, other than those belonging to the tricolor section, to become tricolors, as the ordinary varieties of bedding Zonals are wholly devoid of the necessary colour in the zone to impart that richness of colour which constitutes a tricolor.—W. J. May, *Kilburn.*

THE LARGE-FLOWERED JASMINE.

(JASMINUM GRANDIFLORUM.)

This is one of the most fragrant and acceptable of all indoor shrubs, and one which is largely grown in all good establish-

Large-flowered White Jasmine.

ments where cut flowers for bouquets are desired. It is generally cultivated as a stove plant, but such treatment is not essential, inasmuch as we recently saw a vigorous specimen of it in Mr. W. Paul's Nursery at Waltham Cross growing and blooming freely in a cool house. In a warm temperature, however, the plant keeps on growing and flowering, and is simply invaluable where choice flowers are much in request during autumn and winter. Last September we saw a splendid specimen of it in Mr. Methven's Nursery, Inverleith Row, Edinburgh, and the plant is also grown by Mr. Wills for cut flowers; nevertheless, it is by no means so plentiful as it deserves to be, since its fragrance and pure white flowers are quite distinct from those of any other plant with which we are familiar. Our illustration was prepared from cut specimens kindly sent to us by Mr. Denning, Londesborough Gardens, Norbiton, by whom the plant is very successfully grown. It is easily propagated by means of layering, and grows luxuriantly when planted out in any deep well-drained soil. B.

COTTAGE GARDENING.

The Grape Vine.

Open-air Culture.—If the same pains and skill were bestowed upon the culture of Grape Vine in the open air as when under glass, a vast improvement would soon take place in its produce. Every cottager who has a bare place on his cottage with a southern, south-eastern, or south-western aspect, may plant a Grape Vine, and if he will give some attention to the preparation of the site, and learn the few simple rules applicable to its culture, he may add both to the comfort of his family and himself as well as to his income. Though the Grapes produced by open-air Vines may in most cases be inferior to those grown under glass, still instances may be found, which, though isolated, are yet sufficiently numerous to show that when the Grape Vine in the open air is well managed very good fruit is the result. The common errors in its culture are:—Training the main branches too thickly; delay, and in some cases almost total neglect, in disbudding; and overcropping. The latter, if fine clusters of fruit be desired, is a very great evil. It may not have so disastrous an effect upon outdoor Vines as upon those grown under glass, for the circumstances under which they are grown are less artificial, but none the less surely does overcropping have a most pernicious effect upon the quality of the produce of any tree or plant subjected to it. True, the Grape Vine in the open air is one of the most enduring of plants, it being scarcely possible to kill it by neglect, but there is no comparison between the produce of a Vine well cared for and one neglected. Almost any soil that will grow good crops of vegetables will produce good open-air Grapes. But the Vine, like the Ivy, seems to have a partiality for old crumbling ruins. Some of the finest open-air Grapes I have ever seen were grown some years ago upon the remains of the old city wall at Norwich; the site was dry and warm, and the soil rich from the accumulations and decompositions of ages. Where the soil is fairly good trench it up 2 ft. deep and 6 ft. square for each plant; as they increase in size more space can be prepared for them. It will be an advantage if a few barrowsful of horse-droppings, fresh loam, lime débris from old buildings, and a few bones, can be worked in at the same time. There is hardly a possibility of making a mistake in adding a reasonable quantity of any of the materials just enumerated, as they are calculated to improve even the best soils as far as their adaptation to Grape culture is concerned. If the site be damp and resting on clay, put in the bottom 9 in. of brick rubble or stones, scatter a few spadesful of lime and coal ashes over the top, water it, and ram it down firmly; on this foundation place the soil and plant the young Vine. There are various ways of propagating Vines. Where there is a hot-bed or a greenhouse, or even a cold frame or hand-light, the best way is to plant single eyes in small pieces of thick turf about 4 in. or 5 in. square and 3 in. thick, laid with the turf side downwards; scrape a small quantity of soil out of the centre, press the Vine-eye into the hollow place so created, and fill up the space with fine rich soil. When a sufficient number of eyes have been inserted, they may be placed under a hand-light and kept close. If a slight bottom-heat can be secured, such as might easily be obtained by digging a hole in any warm corner, filling it up with manure covered with about 2 in. of soil to arrest and absorb any destructive gases that might arise in fermentation, the eyes will root and break stronger. When the hand-light is placed on the prepared site, the turves containing the Vine eyes should be placed closely together in it, and kept close. In cutting out the eyes leave about half-an-inch of wood on each side, and take off a thin slice of bark and wood from the side opposite to the bud, to induce the emission of roots. For open-air Vines February will be found an excellent time for this operation, and the young Vines might be planted during the early summer, when hardened off and the border well prepared. There are various other modes of propagating the Grape Vine, such as layering, which may be done when the Vines are at rest, or during the summer when the young shoots are getting firm. Simply make an upward longitudinal cut about halfway through the shoot, and through a joint to arrest the sap at that point; peg it with the cut side downwards into a small mound of rich soil and keep moist, or peg it into a pot of moist soil. Tie each

layered branch to a stake to keep it in position. Cuttings of ripened wood 6 in. or 8 in. long, with an inch or so of old wood at the base, planted firmly against a wall at any time during autumn or winter, leaving about one eye out of the ground, will make thriving plants in a short time. Whichever plan may be adopted, some time between May and August is the best season for final planting, unless cuttings are relied on, and then autumn, as soon as the wood is ripe, would be found most suitable. If the young plants be taken from pots the roots should be carefully uncoiled and straightened out, and covered with about 6 in. of soil, and then mulched with 2 in. or 3 in. of half-decayed manure, giving them water when necessary. The first season, or the remainder of the season, after planting the growths might all be laid in to encourage root-action; but in the autumn, when the wood is firm and well matured, head them back to three eyes. In the following spring select the two best placed shoots, train them up vertically, and rub off all other buds. When the shoots are 6 ft. high pinch out the terminal buds to strengthen and cause the back eyes to plump up; afterwards the new leader should be laid in, but all other laterals should be pinched to one leaf. In autumn prune to within 4 ft. of the base—more or less, according as the wood is strong and matured—and train the shoots out horizontally at right angles. From these horizontal rods train up vertically other rods 2 ft. apart to form the main branches of the tree, from which the fruiting spurs will issue in due course. As regards cropping, scarcely any arbitrary rule can be laid down, for so much depends upon the strength of the Vines; but no matter how strong or vigorous they may be, one bunch only should be left on each shoot, and it will be better to still further reduce the number, if the bunches be large. In spring, as soon as the bunches are visible, commence disbudding, by gradually removing the weakest growths, until only sufficient young wood to fill up the wall is left. These should be laid in at an angle of something like 45°, and be stopped at one joint beyond the fruit, and all subsequent laterals during the season pinched to one leaf. If time can be spared the bunches, or some of them, might be thinned with the scissors; but it should be done as soon after the berries are set as possible, for if delayed much longer, the result may perhaps end in disappointment. Vines may be planted as single cordons, and trained either vertically or obliquely, or in any other form, but where there is sufficient room for the roots to extend, in my opinion it is much better to allow each Vine to cover a good extent of wall, and where this is practicable, they will improve annually for many years. What is termed the winter pruning should be completed as soon as the leaves fall; it is a great mistake to delay this operation till February or March, as is too frequently the case. Healthy prolific Vines may always be pruned back to one good eye, and unless they have been otherwise badly treated, they will always show plenty of fruit. In the course of years it is a good plan to cut back an old rod occasionally and lead up a young one, as young wood always bears the finest fruit. In dealing with old Vines that have been neglected, cut out half the main rods at the autumn pruning, and the following spring train up young shoots in their places. It is best, of course, to take out every alternate rod, and as soon as the young rods come into bearing—which they should when one year old—cut out the remainder of the old ones, and replace them with young wood the following season; this will give an opportunity, if the main branches have hitherto been too much crowded, to reduce their number, and thereby open out the Vine. Thus the Vines, so far as the branches are concerned, will be thoroughly renewed; but, at the same time, if it be found necessary, something ought to be done for the encouragement of healthy root-action. If exhaustion or poverty in the soil be the only fault, this can be overcome by heavily mulching with short manure, or by sprinkling guano over the border twice or three times during the season, and watering it well in. If the border be too damp, or the soil too close and sour, the only effectual remedy is to remove it carefully, saving as many of the roots as possible, and to remake the border with fresh soil, taking care that the drainage is not again neglected. Vines trained on cottages often have their roots running under paved courts, which will therefore be somewhat difficult of access; but, as a rule, Vines so situated are in the best of health, and if the wood be well thinned out, and the disbudding and pinching regularly attended to, they may continue for many years with their fruit-bearing powers unimpaired. Should a stimulant at any time be necessary, guano may be used without any disagreeable effluvium arising therefrom.

The best Grapes for open-air culture are:—White—Royal Muscadine; black—Esperione.

The Vinery.—Thousands of small gardens now-a-days have each their Vinery, and in favourable situations good Grapes have been grown without going to the expense of making elaborate borders. In one of the largest and most successful Grape-growing establishments in the Eastern Counties nothing in this way was required beyond trenching up the ground 2 ft. or 3 ft. deep and adding manure. The soil was naturally a deep, mellow loam, and as the place was situated on the side of a hill the drainage was perfect, and in any similar situation no great expense need be incurred in border making. But there are a great many places—indeed, the majority are so—where, if first-class Grapes be desired, a border for the roots must be specially prepared; and where this is necessary it is a mistake to attempt it grudgingly, half measures being seldom satisfactory. Where the soil is really bad it is better to have it wheeled or carted away, and replaced with fresh. The top spit from an old pasture about 3 in. deep is the Grape grower's ideal of a soil for the Vine, and to five or six loads of this may be added one load of horse-droppings or any thoroughly good manure. If the loam be heavy, old mortar, charcoal dust, and crushed bones may be added; or if the main staple be light and sandy, marl or clay will be beneficial, especially for thick-skinned Grapes, such as Muscats and other late-keeping kinds. The drainage of course must be first attended to, and in places where artificial borders are necessary it is better to have at least half their bulk or thickness made above the ground-level, and in the case of a new building this should be borne in mind in order that the front wall should be of the necessary height. I should prefer to have the front wall plates resting on 14-in. piers 4 ft. apart, rather than have the wall on arches, which is a very common arrangement. Very good Grapes have been grown where the roots have been confined to inside borders, and the same is also true when the roots are exclusively outside, but I think the best arrangement is to have the border partly inside and partly outside, with the Vines planted inside so that the roots can spread out in all directions. Rough stones or brickbats 1 ft. in thickness should be placed on the bottom, which should have a sufficient inclination to the front to cause any excess of moisture to pass freely away to the drain laid along the front of the border and 1 ft. below it, the space to be filled up with stones. It is not necessary that all the width of the border should be made at the same time; in fact, it will be better for the Vines not to do so, as the roots cannot occupy it all at once, and if 6 ft. or 8 ft. be made to start with, the remainder can be added when the Vines are in full bearing. The width of border must in some measure depend upon the size of the house, but it should not be less than the length of the rafters, and it may be as much more as is convenient. As regards the depth of soil in Vine borders local conditions must be so fully taken into consideration that it is hardly safe to lay down a rule thereupon. In the Eastern Counties, with a porous subsoil and a limited rainfall, I should recommend the borders to be made at least 3 ft. deep. In some parts of the Midlands and in the Northern and North-western Counties where the rainfall is greater, a depth of 2 ft. might be found sufficient. On a dry soil I should not recommend shallow borders to be made unless the facilities for watering are almost unlimited, but where the situation is unfavourable shallow borders are more manageable. It should be borne in mind, however, that the more artificial the conditions are under which fruit trees are grown the greater is the necessity for unremitting attention to them. If a Vine be planted against a wall or in a glass house, and left without the requisite amount of care and attention, comparative failure will be inevitable. A tree planted in a shallow border requires more care in mulching and watering than if the soil had been of a greater depth. This, no doubt, explains why men who have been successful fruit-growers in one place entirely fail on moving to another, where the local conditions are altogether different. Like means will not always under all circumstances produce like results. I have already

adverted to the propagation of the Grape Vine, and therefore it is not necessary to go further into details. Since that terrible scourge, the Phylloxera vastatrix, has made its appearance in English Vineries, where Vine eyes can be obtained from clean, healthy Vines, it may be advisable to raise the young Vines for planting at home; and this can easily be done by starting them on turves in a gentle hot-bed in February. The borders could be made in March, and the young Vines planted in May, or as soon as they were in a fit condition to put out. The best Grapes for a small house are Black Hamburgh, Foster's Seedling, Buckland Sweetwater, Black Alicante, and Madresfield Court Black Muscat; and if only two kinds be desired, I should select Black Hamburgh and Foster's Seedling. Although I have suggested the planting should be done in May, as it gives a longer time for growth than if planted later, I have planted in August, and never had Vines succeed better than those did. The soil then is so warm, the roots take such a thorough hold of it, that when spring comes round again they are prepared to make a very vigorous start. One Vine should be planted to each rafter, but a second rod may be trained up the centre of each light, unless the house is used for plants as well as Grapes; in that case it will be better to do without the additional rod. In the autumn, prune back to the bottom of the rafter, and the following season the young rods will cover the roof early. Stop them when they reach within 2 ft. of the top, and pinch all laterals just beyond the first leaf. This is important, as the size of the future bunches is dependent upon having well-developed foliage on the main rods. The third season, even when planted as late as August, they should be strong enough to carry a full crop. Of course, much will depend upon the care bestowed on the young Vines. The main agents of growth are heat and moisture, accompanied by a careful attention to ventilation, and these either are, or ought to be, entirely under the cultivator's control, and should be present in such proportions as to secure the most perfect development and maturation both of wood and foliage, for good fruit never yet came from weak, spindly wood, or thin, flimsy foliage. I am assuming that little or no artificial heat would be employed, for to force Grapes successfully calls for skill of a higher order than when they are brought forward with the warmth of the sun only. Much, however, may be done by early closing on bright afternoons, not only to forward, but also to bring to a high state of development both size and quality. In the application of atmospheric moisture, almost everything depends upon the external temperature. If the weather be bright and sunny, damp all dry places on both borders and paths at about four o'clock; when the house is closed, and during periods of bright weather in summer, when the crop is swelling off and great demands are made upon the plants, the floors may be damped in the middle of the day. Both the colour and flavour of the fruit depend upon keeping the foliage healthy, and this mid-day damping of paths, &c., in hot weather is a great support to the foliage. Small houses require more attention in this way than large ones, because from the latter containing a large body of air they are less influenced by the external temperature. When the fruit begins to colour a drier atmosphere must be maintained, damping only on very hot days. All Vine borders should be heavily mulched with manure both inside and out, and this is doubly important with shallow borders. The plan I have adopted for years for late houses is to mulch in April, leaving it on till the following February or March, then fork it in lightly, leaving the surface loose and exposed for a few weeks to aërate and sweeten. No doubt this forking destroys a few of the surface-roots, but the benefits derived from the operation seem to counterbalance any ill-effects produced by it. In the course of eight or ten years, as the fibres in the soil decay, this constant mulching tends to render the soil rather pasty, but this may be rectified by forking in a good layer (2 in. or 3 in.) of old plaster, or the *débris* from old buildings; but 10 in. or so of the top soil taken off and replaced with fresh, turfy loam, will be found a superior treatment. In this way the health and fertility of the Vines may be kept up for many years. In removing the top soil where surface-rooting had been encouraged, great care must be taken not to injure the roots more than necessary. The steel fork should be carefully used to extricate the largest roots from the soil, and it will be better not to begin the work till there is a chance of completing it without any unnecessary exposure or delay. As regards watering the roots, in very many cases Vines do not get sufficient water. They are gross feeders, and in no case—not even in winter—should they be allowed to become dust-dry.

Inside borders are perhaps more likely to be overlooked and neglected than those outside, and in all the early stages of growth it will be better if it can be conveniently arranged, to have a portion of the water heated to mix with the remainder, and raise the temperature of the whole. Some misapprehension may possibly exist as to what constitutes a good soaking of water, as the term admits of several interpretations being placed upon it. Roughly speaking, if a border require watering beyond a mere surface-sprinkling, for the purpose of raising vapour in the atmosphere, less than what would be equivalent to 2 in. of rainfall all over the surface, would not be sufficient, and this must be given as often as is necessary—in all probability it will be required two or three times during the growing season again, when all the fruit is cut; and once more about February or March, when growth begins. This, however, is mere conjecture, but it is as near as can be given without knowing all particulars of the strength of the Vines, and the constitution and condition of the borders.

Ventilation.—This is of such great importance for the successful development of the Grape Vine, that if great attention be not bestowed upon it, either the fruit may be spoiled by mildew, or the foliage destroyed by red spider; or, to take the least of the evils that may arise from neglect, the fruit will probably lack colour, flavour, and finish. From a cause to which I have previously alluded, small houses require more attention than larger ones. The thin stratum of air in a small house soon becomes heated by the sun, whilst at the same hour in the morning the temperature of the air in a large house would be comparatively cool. In old-fashioned houses glazed with small squares of glass, with wide laps between them through which the air had free access both night and day, there was not much occasion for night ventilation, as at times, especially in windy weather, there was an excess of air; but with modern-built houses, where large squares of glass are used, early-morning ventilation is especially important, and on mild nights, or whenever frost is not apprehended, a small aperture to admit the air along the back of the house will keep the inside atmosphere in motion, and will otherwise be beneficial. The proper way to ventilate a Vinery when growth has commenced is on bright mornings to slightly open all the back ventilators not later than six o'clock, gradually increasing the ventilation as the sun gets higher and has more influence on the glass. Sudden changes or extremes of temperature are always hurtful to tender foliage, and when the houses are kept closed till eight o'clock or later, as frequently happens, the lights are opened too wide, in order to keep down the temperature, whereby a rush of cold air is admitted that chills and often rusts the young fruit. The proper time to push on growth by a little extra heat from the sun is in the afternoon. Commence reducing the ventilation by half-past three, and have all finally closed by four o'clock, then if all the borders and paths be well moistened a genial growing atmosphere will be created that will be exceedingly beneficial to the Vine, and on mild nights, about eight or nine o'clock in the evening, half-an-inch of air may be admitted in a few places along the back to prevent any stagnation in the atmosphere of the house. In windy weather this will be unnecessary, as in the best glazed houses when any disturbance takes place in the atmosphere outside, its influence is always felt under a glass roof. Where little or no artificial heat is used, tables of temperature would be of little use to the inexperienced cultivator, and might possibly mislead him. Advantage should be taken of favourable weather to ventilate freely, especially in the early part of the day, gradually increasing it as the thermometer rose till ten or eleven o'clock; when in hot weather let all the lights be open. Oftentimes in spring we have a bright sun and at the same time a keen, biting wind, and it is at such times that caution and judgment are necessary in order to avoid cold currents rushing through the

young foliage and fruit. On such days front air must be sparingly given, if at all, and it is better to allow the temperature to run up a little higher than usual, freely sprinkling the paths and borders with water to assist the foliage, rather than run any risk from cold draughts: the house may at all times during the growing season, or till the fruit begins to ripen, be closed early enough for the thermometer to rise to 80° or 85°, and this will have a considerable effect in swelling the fruit to a good size. When the Grapes begin to colour, a free circulation of air should be left on all night, or the colour will be imperfect and the flavour deficient. The bearing wood of Vines should be trained at least 15 in. or 16 in. from the glass. When Vines are trained close to a glass roof, where large squares of glass are used, and the rafters are light, and consequently the shade almost nominal, the sudden changes of temperature often have an injurious effect upon the health and vigour of the Vines. Following close upon hot bright days we often have very cold nights, and the foliage close to the glass loses colour and looks pale and sickly, as much or more perhaps from the radiation at night as from the heat by day. I have known several cases where the trellis had to be lowered in consequence of this, and afterwards the Vines recovered their healthy appearance.

Thinning the Grapes.—This is a matter upon which no one can speak with any degree of confidence without a fair amount of experience of the strength and condition of the Vines. Speaking generally, at least two-thirds of the berries should be taken out in such a manner as to give each berry left, room to swell to its full size. This should be done as soon as the berries are well set, and as far as possible leave in all those that appear to be taking the lead, and cut out the small ones. Where high culture is carried on severer thinning will have to be adopted, in order to give the berries of Black Hamburgh and Buckland Sweetwater room to swell to their full size. Thinning Grapes should be performed with a careful hand, to avoid cutting or injuring the remaining fruit, and the one operation should be final. Nothing but practice, however, can make an expert Grape thinner.

A Noble Tropical Tree (Mora excelsa).—Having passed in the course of the day several small tributaries of the Barima, its bed became narrower and more winding, so much that our progress was much slower. The banks increased in height, and the vegetation became more luxuriant until, with the appearance of that gigantic tree of the Mora excelsa (Benth.), which may be called the Oak of the Tropics, it reached its culmination. There is none of the European forest trees which could be paralleled with it as a representative. Our large Oaks would only seem dwarfs if standing near one of these giants, the stem of which is overshadowed by the most beautiful dark green foliage. The Indians give this noble tree the name of the "Chief of the Forests," and this is the most appropriate name which could have been chosen. We were often deceived by these giant trees when we suddenly rounded one of the bends of the river, imagining we saw before us in the distance a number of wooded hills, which, when nearer, changed into single groups of Mora trees, towering high above the surrounding vegetation. No idea can be formed of a Mora forest; it is so thick that the sight of heaven is denied to those who enter it. Everything is drowned in a mass of shadows; the eye can only behold a labyrinth of trees of gigantic proportions which astonish and overawe him, garnished with a dome of foliage that darkens the atmosphere, and renders it intolerably heavy and gloomy. Lianas of immense thickness entwine with giant arm these trunks and ramble to the highest branches, where they crown these giants; then again grow down from this giddy height on to the smaller trees, the branches of which they entwine, and so fetter one tree to the other with a network, and hold in their strong arms those giants standing close on the banks of the rivers, whose secure position is often undermined by the rapid streams, thus preventing their sudden fall; but should such a giant succumb, by his fall he will carry all the trees entwined by the same Lianas with him to destruction. The importance of the Mora for shipbuilding, which my late brother has already pointed out in his first travels, has been confirmed since. On the upper Barima this valuable tree is found in such numbers, and of such immense size, that the trees growing near the banks of the river alone would be sufficient to supply a whole fleet with material. The wood is so close and cross-grained, that it is difficult to split it. It is considered by the most competent judges to be superior to Oak, as it is not subject to the dry rot.—"Schomburgk's Botanical Reminiscences of British Guiana."

PLATE XXXVIII.

SELECT CANDYTUFTS.

(WITH A COLOURED FIGURE OF IBERIS GIBRALTARICA).

Few of the natural Orders into which plants have been classed contribute more largely to the gaiety of the spring garden and rockwork in early summer than Crucifers, to which our Drabas, Aubrietias, Alyssums, Arabises, and a host of other genera belong, and amongst these the genus Iberis occupies a prominent position. The old annual Candytuft, with which in its varied tints of colour we are all tolerably familiar, has a special though somewhat short-lived beauty, like the majority of annuals. It was and is essentially defective in its lasting properties; but besides the annual species we have a perennial section, amongst which we find many free-growing plants of a semi-shrubby character, perfectly hardy, and producing most effective cushions of snow-white bloom, raised from 3 in. to 6 in. above the ground, and extending laterally with a freedom of growth that renders them essentially valuable where an extent of rock surface has to be covered with Nature's drapery, or a spot of arid earth has to be clothed as with a garment whose compound parts consist of a dense arrangement of dark green foliage of a permanent and persistent character, from which during the months of May and June rise hundreds of snow-white corymbs, whose purity is greatly enhanced by the depth in tint of the subtending green. But, besides these trailing species whose value for garden decoration has long since been recognised, we have a more shrubby section, characterised by an upright habit of growth, and in this section the Gibraltar Candytuft stands without a rival. Its corymbs of bloom are not only large—as will at once be inferred from the accompanying plate—but they are suffused with a delicate lilac tint, varying in a gradually modified tone of colour from the circumference to the centre, the latter retaining for some time the original purity of the entire inflorescence. Here, then, is a plant whose only defect consists, not in any lack of beauty, nor in the evanescent character of that beauty, but in its inadaptability to stand, unless under very exceptional circumstances—the rigour of our northern climate. I may, however, state that the true value of this Iberis is to be found and appreciated, not as a capricious out-door plant, but as a valuable adjunct to the decoration of the greenhouse in the early spring months; for this purpose, spring-struck plants, grown on during summer and well exposed to the full influence of the sun, by means of which alone alone a woody, short-jointed character of growth is to be obtained, will result in masses of delicately-tinted bloom in the early spring, whose beauty will vie with almost any other decorative conservatory plant at that season. The following are descriptions of some of the more popular species in general cultivation:—

Gibraltar Candytuft (Iberis gibraltarica).—This kind has hitherto been but very rarely cultivated; indeed, it was lost to our gardens till recently sent from Guernsey by Mr. Wolsey, who found it in some cottage garden there. It is larger in all its parts than the other cultivated kinds, has oblong, spoon-shaped leaves, nearly 2 in. long by ½ in. or more wide, and distinctly toothed; the large flowers, of delicate lilac tint, being arranged in low close heads, and appearing in spring and early summer. It is an ornamental species, but will never rival the well-known white border kinds. As I have before stated, its hardiness is doubtful, and I should advise its being wintered in pits or frames till sufficiently abundant to be tried in the open air, but I am informed that it has stood without injury several severe winters at York. It should be planted on sunny spots on rockwork or banks. A native of the south of Spain; increased by cuttings, rarely producing seeds in our fickle climate.

The Ever-blooming Candytuft (I. semperflorens), an upright-habited shrubby plant, with smooth, entire-margined, slightly fleshy, obtuse-pointed leaves. It produces large dense corymbs of pure white flowers somewhat spasmodically; hence the appropriateness of its specific name; though hardy enough to stand our winters when grown at the foot of a south wall or in a very sunny corner of the rockery; it is not adapted for general border culture, but under those favourable conditions it forms a pretty evergreen bush rarely devoid of bloom all the year round. It is a native of Sicily and other Mediterranean islands. There is a pretty variegated form in cultivation, which appears to retain its variegation with much constancy.

Supplement to *The Garden*, Office 37, Southampton Street, Covent Garden, London, W.C.

IBERIS GIBRALTARICA.

Evergreen Candytuft (I. sempervirens).—This is the common rock or perennial Candytuft of our gardens, as popular as the yellow Alyssum and white Arabis. Half shrubby, dwarf, spreading, evergreen, and perfectly hardy, it escapes destruction where many herbaceous plants are destroyed; and as in April and May its neat tufts of dark green are transformed into masses of snowy-white, its presence has been tolerated longer than many other fine old plants. Occasionally, even in gardens entirely devoted to a few "bedding plants," it may be seen on the margin of a shrubbery border or in some neglected spot. No hardy flower is more worthy of being universally grown in gardens, from that of the cottage to the largest in the land. Where a very dwarf evergreen edging is required for a shrubbery, or for beds of shrubs, it is one of the most suitable plants known, as on any kind of soil it quickly forms a spreading band almost as low as the lawn-grass, finishing off the plantation very neatly at all times, and changing into dense wreaths of snowy-white flowers around the borders in spring and early summer. When in tolerably good soil, and fully exposed, it forms spreading tufts often nearly 1 ft. high, and they last for many years. Like all its relatives, it should be exposed to the full sun rather than shaded, if the best result be sought. A native of Greece, Asia Minor, Italy, Southern France, and Dalmatia, and readily increased by seeds or cuttings. The more common garden name for this species is I. saxatilis; which is the most correct I hesitate to say, as there is great difficulty in correctly referring the species of this genus to the original short descriptions given in De Candolle's "Prodronus."

I. Garrexiana is a variety of the Evergreen Iberis, not sufficiently distinct to be worthy of cultivation; in fact, it and several other Iberises prove to be mere varieties, and very slight ones, of I. sempervirens, when grown side by side; it however seeds more abundantly, and is less spreading in habit.

Coris-leaved Candytuft (I. corifolia).—A very dwarf kind, about half the size of I. sempervirens, attaining a height of only 3 in. or 4 in. when in flower, and perfectly covered with small white blooms early in May. Few Alpine plants are more worthy of general culture, either on rockwork or in the mixed border, for the front rank of which it is admirably suited. It is probably a small variety of the Evergreen Candytuft, but for garden purposes it is distinct enough and remarkably true and constant to its character. A native of Sicily, and probably of other parts of Southern Europe, easily propagated by seeds or cuttings, and thriving in any soil.

Correa-leaved Candytuft (I. correæfolia).—This plant has now become very popular in London gardens, and used to go by the name of I. gibraltarica, from which it is quite distinct. It is readily known from any other cultivated species by its entire and rather large leaves, by its compact heads of large white flowers, and by flowering later than other common white kinds. Both the individual flowers and the corymb are larger and denser than in the other species, and the blooms stand forth more boldly and distinctly from the smooth dark-green leaves. It is an invaluable hardy plant, and particularly useful in consequence of coming into full beauty about the end of May or beginning of June, when the other kinds are fading away. It is indispensable for rockwork, the mixed border, the spring garden, and may also be naturalised with good effect in bare rocky places. It is particularly well suited for planting on the margins of choice shrubberies, bringing them neatly down to the grass line, and may also be used as an edging to beds. Of its native country we know nothing; but it was raised in, and first sent out from, the botanic garden at Bury St. Edmunds, and it is probably a hybrid. Mr. J. G. Baker considers it to come nearest to I. Pruiti, of the Nebrode Mountains, in Sicily. Readily increased by cuttings, but appears to loose its true typical character when raised from seed.

Tenore's Candytuft (I. Tenoreana).—A neat species, with toothed leaves, and a profusion of white flowers changing to purple. As the commonly cultivated kinds are pure white, this will be the more valuable from its purplish tone, added to its neat habit. It, however, has not the perfect hardiness and fine constitution of the white kinds, and, so far as my experience goes, is very apt to perish on heavy soils in winter; but on light sandy soils it will prove a gem, and also for well-drained positions on rockwork. Where rockwork does not exist, it should be placed on raised beds or banks. A native of Naples, and easily raised from seed; it should be treated as a biennial.

Looking Forward.—In the province of Biscay every landowner must plant two saplings for every timber tree he cuts down. In Java the birth of every child is celebrated by planting a fruit tree, which is carefully tended as the record of the age of the child whose birth it registers. This wise regard for the future deserves imitation.

MY DIARY FOR SEVEN YEARS.

By W. DENNING.

September 18.—Putting 600 pots of Fulmer French Beans into the Strawberry-house; this crop should last in bearing till Christmas. Sowing a large bed of Radishes close to south wall; shifting some Schizanthus into 60-sized pots; placing pots of Lilium auratum in the sun to ripen the bulbs after flowering; moving Azaleas under cover. *Planting* out Peach trees from pots after breaking their balls; making up failures among Endive. *Miscellaneous*—Nailing Apricot trees; syringing Azaleas for thrips with soft soap, 6 oz. to a large potful of water; looking after thrips on Peach trees and syringing with Quassia chips and soft soap water; getting all Onions into loft and spreading them out thinly; digging ground for Cabbages; putting ridge in pit for late Cucumbers; earthing-up some late-planted Broccoli, &c.; giving Cucumbers a little top-dressing; hoeing amongst Spinach, Lettuce, Stocks, and Wallflowers, also among autumn-sown Onions.

Sept. 19.—*Potting*—Pinks and Carnations; putting cuttings of Calceolarias into a cold pit; also some Hollyhock cuttings in single pots and placing them in heat, scarcely giving them any water, but leaving on a little air night and day. *Planting*—Cabbage, early sorts, in rows 6 in. apart. *Miscellaneous*—Tying up Chrysanthemums, also standard Heliotropes; beginning to water Orchids in baskets when they require it instead of syringing them every morning; no shading, except in the case of Phalænopsis and Lycaste, before ten a.m., or after quarter-past three p.m., leaving air on till four or half-past four p.m.; gathering Magnum Bonum and Green Gage Plums, also the Irish Peach and Kerry Pippin Apples; Vine wood ripe, therefore fire only used to keep the temperature from sinking below 50° (this applies only to Vineries with fruit hanging in them; others may sink lower).

Sept. 20.—*Potting*—The Flower of Day Pelargoniums that were struck in pans; re-arranging the greenhouse and potting up a few plants of Alyssum for cuttings in spring; shifting tree Mignonette into larger pots; putting Dendrobium Devonianum and D. longicornu into more heat to finish growth, also D. McCarthiæ; these three sorts would do better in heat early in June, as would also D. crassinode and perhaps D. Bensoniæ and D. crystallinum, in order to get growth made quickly. Putting in cuttings of Verbena and Gazania in heat, also more Pelargonium cuttings, consisting of Mrs. Pollock, Christine, and Beauty, into boxes set on flues. *Miscellaneous*—Taking off Strawberry layers for planting; syringing Vines for thrips with soft soap and Tobacco-water, *i.e.*, Vines from which the crop is cut; watering Spinach with guano-water for grub; gathering Ribston Pippin Apples; taking up Garlic, also the most forward Lapstone Kidney Potatoes; spawning and soiling second Mushroom-bed; putting soil into a pit in which to plant Tea Roses for button-hole bouquets; thinning Turnips 6 in. apart; removing low boughs which overhang walks.

Sept. 21.—Finishing up Hyacinth potting; re-arranging Fern-house; planting spring Cabbages, also Lettuces; pricking out Cauliflowers under hand-glasses and close to walls, also in frames; tying-up scented-leaved Pelargoniums ready for conservatory, also Endive to blanch; gathering Apples, and also Bergamot and Marie Louise Pears; turning Mushroom manure for another bed; giving Celery a sprinkling of guano, and just enough water to wash it in; beginning to earth-up main crop of Celery for first time, also latest Celery; cleaning Asparagus beds; Celosias in good condition now, for conservatory decoration.

Sept. 22.—Putting Cinerarias into their flowering pots; potting off some plants of Humea elegans; potting Tulips, also more Roman Hyacinths, others growing satisfactorily; potting Narcissi and Intermediate Stocks; re-arranging Lycaste-house; putting Mignonette on front shelf in second Peach-house; putting first Cinerarias on front shelf in third Peach-house; shifting latest Balsams; planting Hautbois Strawberries, also Sweet Williams all over pleasure ground by the sides of woodland walks; plunging Disas in Moss, after being potted in very sandy peat; tying up July-sown Bath Cos Lettuce; syringing Violets for spider; gathering some Louise Bonne of Jersey, and sending in Bon Chrétien and Beurré d'Amanlis Pears, the latter very good; gathering Lobelia seed; making pits ready for Roses and Violets; top-dressing early Vine border; clipping Yew hedge; cleaning Strawberry plantation.

Sept. 23.—*Sowing*—Nemophila for baskets, also Saponaria. *Potting*—Some Guernsey and Belladonna Lilies, also Crocuses and Snowdrops; Iris Susiana and Her Majesty Narcissus; putting Carnations showing flower under cover; putting Bouvardias into Primula pit to give them a little heat; putting a few cuttings of Christine Pelargonium in boxes, and placing them on Vinery flue. *Planting* out August-sown Cabbages, an operation which should have been

done on the 6th inst.; should sow August 5th for this planting in the north of England. *Miscellaneous*—Netting the best Pears and Peaches; put a skeleton frame over French Beans to carry nets to protect them from morning frosts; gathering all Apples and Pears in orchard except "Robins" and Greenings; Cucumbers never allowed to get above 70° at night by fire-heat.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Lilies in pots of the Lancifolium section, and any plants of Lilium auratum that have flowered late should be set out-of-doors after they have done blooming, in a sunny situation, and sufficiently but not overwatered, until the leaves have turned yellow and fallen off naturally. The unsatisfactory condition in which these and similar plants are so frequently met with is often traceable to the comparative neglect which they undergo after flowering, through being thrust into any out-of-the-way place, and either prematurely dried off for want of water, or deluged with rain if the weather happens to be wet. The longer the leaves keep fresh and green the stronger the bulbs will be next year. It sometimes happens that odd plants of these Lilies in a collection, through some cause or other, lose their leaves prematurely, even before they have ceased flowering; if these be marked so as to identify them the following season, it will be seen that, instead of improving in size and strength, they have become weaker. If the plants have not sufficient sustenance through their being too many in a pot, insufficient light in the early stages of their growth, or not enough water at any time whilst growing, the leaves come thin, and have not strength to remain on the plant the allotted time. Lilies, that have flowered early, and the tops of which are already dead, should be placed where they will not be exposed to drenching rains, or suffer from the opposite extreme, either of which is fatal to the bulbs increasing in size and ability to produce flowers as they ought to do.

The Small Roman Hyacinths that can be had in flower by the beginning of November, and in succession through the early part of the winter, are not grown in sufficient abundance by amateurs. They occupy little room, thriving as they do in 6-in. or 8-in. pots, or in shallow pans, the bulbs being inserted almost as close as Crocuses are usually placed. They will bear forcing well, and are very suitable for room decoration, the flowers being more useful for cutting than those of the large varieties. To have them early the bulbs should be procured at once and potted. Like all bulbs used for similar purposes they are much more dependent upon the strength already stored up in them than upon the sustenance which they receive from the material in which they are potted, consequently any ordinary soil will answer, provided it is of a moderately open sandy nature. In potting leave just the crown of the bulbs above the soil, pressing it tolerably firm around them, and treating them afterwards as if they were large varieties, plunging the pots out-of-doors, or in a cold frame in a bed of ashes, which should also cover the tops or the bulbs 3 in. or 4 in., keeping the soil and plunging material in a sufficiently moist condition to assist the bulbs in making roots and commencing top-growth.

Chrysanthemums in pots should now receive their final tying, using sticks enough to support the plants and keep them from being broken by the wind. As soon as the flowers are set thin out the shoots; it is a mistake, even for ordinary decorative purposes, to allow the lateral flowering shoots to remain crowded, as the size of the blooms is thereby much reduced, and in texture they are so much thinner as not to last nearly the length of time they do when no more flowers are left on the plants than they can properly support. When the pots are plunged, or even if standing on the surface of the ground, they will root through the bottom if not moved occasionally; to prevent this it is a good plan to turn them round once a fortnight, for if the roots be permitted to take much hold of the soil on which they stand they must necessarily be broken when the plants are taken indoors, and ruptures in that way give them a check which causes imperfection in the flowers. The open centres that badly-managed Chrysanthemums so often exhibit are mainly attributable to the checks which the roots receive, or being allowed to bear too many blooms. Give plenty of manure-water now, they will bear it in large quantities, and stronger than almost any other plants.

Fuchsias.—Cuttings of these that were put in to strike some weeks ago for flowering early in spring will be now ready for potting off singly. Put them in 3-in. or 4-in. pots, according to the quantity of roots they have made. They should have good ordinary loam in which to grow, new if it can be had; if not, such as has been used during the early part of the season for growing Cucumbers will do. Fuchsias do not require quite so much sand in the soil as most quick-growing subjects, but they like it pressed moderately firm in the pots. These summer-struck cuttings are greatly preferable for early flowering to those rooted in the spring, however early they are then put in, but they thrive best when they can be accommodated through the winter with a night temperature of from 45° to 50°; the latter suits them better than the former. Placed near the glass, they make steady progress, and not only bloom before the old cut-back plants, but are much nicer looking. If the young plants show any disposition to form flowers during the autumn, these must be nipped off as soon as they make their appearance. Keep each plant tied up to a small stick. Fuchsias are so easily struck and easily grown, that the old, naked-stemmed plants so often met with should never be tolerated.

Apples and Pears.—As the earlier autumn-ripening varieties come in they should be gathered and placed in the fruit-room. No fixed dates can be determined for gathering any particular kind, as situations and seasons cause such a difference in the time of ripening, but such Pears as Williams' Bon Chrétien, if allowed to hang too long on the trees, spoil, becoming dry and mealy; they should be gathered as soon as the stalks will part from the tree with a slight pull. Although these and other varieties of early autumn Pears and Apples cannot be kept long, still the season for each may be prolonged by putting a portion in the coolest place available, such as an underground cellar. On the other hand, ripening may be accelerated by warmth, for which purpose nothing answers better than placing the fruit singly on sheets of glass elevated close to the roof in a dry, airy Vinery, where the sun will come upon it; but where this plan is followed there must be a fair amount of air admitted or the fruit will be injured. Amateurs often reap much less benefit from their fruit through keeping it in unsuitable places than they would do were more judgment exercised in storing it. A damp cellar or an over-dry attic are the places too often made to do duty as a fruit-room; in the former case the quality is always inferior, either Apples or Pears so placed generally having a musty flavour. When the atmosphere is too dry they get shrivelled and insipid, usually coming in before their proper season. A room in which fruit is kept should never be on a second storey, or have any apartment under it, such a situation being almost invariably too dry. There is nothing equal to a room with an earthen floor; from this there will always arise a slight amount of moisture that will prevent the shrivelling that inevitably takes place more or less when it is boarded or concreted; the shelves should be solid (not composed of bars admitting a current of air through them), and covered with clean sweet Wheat-straw; or, still better, where it can be had, dry Fern (the common Bracken), which is not liable to mould with the moisture that is given off by the fruit when first gathered, at which time a little air should be admitted, but not too much. Neither early nor late-keeping fruit should be laid thickly in large quantities, but it is not necessary to place it in single layers as is sometimes recommended, the principal thing is to handle it carefully, especially Pears belonging to varieties that will keep for some time. Nevertheless, it is no uncommon occurrence to see those engaged in gathering Apples or Pears descend the ladder with an apronful, and shoot the whole out into a basket or other receptacle; the effects of this are not seen at the time, but almost every fruit is bruised more or less under the skin. Apples are not so easily injured as Pears; all keeping varieties of the latter should never be subjected to rougher usage than eggs would bear without danger of breaking them. There is another matter connected with these kinds of fruits which often escapes observation, that is, the liability of the flavour to get injured by being near anything possessing a particular odour, such as strong-smelling herbs, or, still worse, mouldy straw. The flavour also suffers when decayed fruit is allowed to remain in contact with that which is sound. Amateurs will, therefore, do well to frequently look over their stores of Apples and Pears from the time when they are first gathered onwards, carefully removing all that are found to be in any way affected.

Kitchen Garden.—Late-sown Turnips should now be well thinned, for if at all overcrowded they make little else than tops. Winter Onions and Carrots that were sown for drawing in spring must also be thinned out, so as to leave them sufficient room; if this be not attended to in time, especially in the case of Carrots, they never grow to a useful size.

Cabbages.—A good piece of ground should be prepared for Cabbages. It is usual to follow Onions with Cabbages; if the land occupied by them have been well manured it will not require further enriching, but in old gardens a moderate dressing of soot and lime worked in will be beneficial not only in assisting the growth of the crop, but also in keeping down slugs. In exposed situations where the ground is dry, it is a good plan to make shallow drills with the hoe about 3 in. deep, drawing the soil up in a slight ridge; in the bottom plant the Cabbages. By this means the ridges will offer a considerable protection,

keeping them from being so rocked about by the winds through the winter, but when the land is naturally wet it is not safe to adopt the method. For early, small-growing kinds, the rows should be 18 in. apart, and the plants 10 in. asunder in the rows, cutting every other Cabbage out for use as early in the spring as they are at all fit, leaving the others to get bigger. The larger-growing varieties, such as Enfield Market, should have the rows 2 ft. apart and 12 in. allowed from plant to plant, in their case also cutting each alternate plant out as soon as usable in the spring.

Stoves.

Now that solar heat is fast decreasing shade should be gradually dispensed with, as it will soon be necessary to admit all the light possible in order to secure the perfect ripening of the young growth made during the summer, without which few plants flower in a satisfactory manner. Atmospheric moisture must likewise be diminished, but not to such an extent as to endanger the plants becoming infested with red spider, or to allow the spread of other insects, such as thrips, to which a dry state of the air is very favourable. The greatest moderation as regards artificial heat must be observed for the present, or many of the plants will be excited into fresh growth, and the object aimed at—the ripening of the wood so as to secure a free head of bloom—will be entirely defeated. Any winter-flowering stove plants now standing in unheated pits or frames, where they have made their summer's growth, should at once be removed to more congenial quarters, or they will soon suffer at the root and shed a portion of their under foliage, which gives them a shabby appearance. Few conservatories are kept sufficiently warm to render it safe for stove plants to remain in them after this season, but where gentle fires can be used at night without injury to the other occupants, such plants as Allamandas, Bougainvilleas, Stephanotis, Dracænas, Marantas, Eucharis, &c., may with safety be left till the end of the month. To prevent injury to the roots from any sudden decrease of temperature to which the weather is now subject, they should be kept as dry at the roots as they will bear without actually flagging, in which condition, with an atmosphere devoid of much moisture, they will endure a greater amount of cold than they otherwise would do. In cases, however, where their use can be dispensed with for conservatory decoration at this late season, it is advisable not to risk allowing choice specimens to remain too long, for if their roots suffer to any extent it is a difficult matter to get the plants to break again in spring, and, if they do so, it takes a long time to thoroughly set right. Clerodendron Balfourianum and C. fallax generally seed freely, and plants raised from these become more vigorous and stronger than those propagated from cuttings, more especially is this the case with C. fallax; as seeds of these will now be ripe they should be sown at once in small pots, and placed in the propagating box or other close place to induce them to germinate, after which a light shelf, close to the glass, will be the proper place for them to stand during the winter, in which position they will keep dwarf and stalky. As soon as they require a shift into larger pots, which they will at the turn of the year, a moderately light, well-enriched soil should be afforded them; this should consist of two parts of fibry loam to one part of old spent manure and well-decomposed leaf-soil in equal proportions, some sharp, clean sand being added to maintain porosity. If large plants be required for show or other purposes this year's stock must be kept; and in order to get these to break before winter they should be headed back at once, after which, place them in a close, moist heat to give them a start, and then shake out and re-pot them into small pots, again keeping them close and moist until they get hold of the soil, when they should be placed near the glass for the winter. Rivinas grown for autumn and winter decoration should now receive weak manure-water two or three times a week to keep the foliage green and healthy, and assist the plants to swell off the numerous racemes of richly ornamental berries, with which they are always laden when well grown and properly managed. Keep them well up to the glass, fully exposed to all the sun and light it is possible to afford them at this season, otherwise the flowers will not set freely, or the berries assume that brilliancy of colour for which they are so highly prized. The beautiful Thyrsacanthus rutilans, so useful for table decorations during the winter, will soon be sending forth its thread-like flower-stems, which without great care are easily injured just as they are emerging from the axils of the upper leaves. As the plants are very subject to scale, any cleaning which they may require should be done at once, so as to avoid having it to do when they are in a more forward state. Epiphyllums having now made their growth, should be kept a little drier at the roots than hitherto, and set in positions where they can have full benefit of all the sunshine with which we are favoured; and where an increase in the way of stock is desired, the present is a good time for putting in cuttings, or for grafting these plants on the Pereskia stock, which is the best and most suitable for the purpose. Worked at about 1 ft. high they soon make useful-sized heads, and are exceedingly valuable plants for table decoration, a purpose for which they are well adapted. All that is necessary in order to get them to unite is to head back the Pereskia to the requisite height, and slit the top down 1 in. or so, in which to insert the graft. Choose a firm, ripe piece of Epiphyllum for this purpose, and slice away a small portion of each side, so as to make it wedge-shaped, and then insert it in the slit top of the Pereskia, after which keep it in position, and the air from it by binding a little soft Moss around the points of contact. The plants when thus operated on should be placed in moist heat, where the stock and scion will be found to quickly unite, when the Moss and ligatures should be removed. Cuttings inserted now should be placed singly in small pots in sandy soil, and arranged on shelves near the glass, where they can have stove-heat, and be kept dry till roots are formed.—J. Sheppard, *Woolverstone Park.*

Orchids.

Orchids of all kinds should now be gone over with the view of putting those which have not done well in better order. Those plants which are not well rooted, which are insecure in the pots, or which may be in bad material, should be taken out of their pots, the dead roots carefully removed, and the plants thoroughly cleaned, after which they should either be placed in small baskets or re-potted into the smallest pots which will accommodate them in suitable material. If treated in this way and kept rather dry until they start, any of the plants which have lost their leading growths may yet make others before the end of the year instead of waiting until the next growing season arrives, by which time the plants will have become very weak. In cleaning the plants care should be taken not to strip off unnecessarily the sheaths which adhere to the mature pseudo-bulbs of many of them, such as Cattleyas, Lælias, Dendrobiums, &c. These sheaths are designed for a protection to the plants; by them the pores in the skins of the pseudo-bulbs are shielded from the air, and the plants are thus enabled to withstand changes of temperature which would otherwise act very injuriously upon them; unfortunately they answer another purpose not so beneficial to the plants, viz., that of a hiding-place for white scale, and where such is the case the sheath should be turned aside, the scale removed, and the sheath replaced; or if the scale have overspread the pseudo-bulb, as a last resource the whole of the sheath may be removed, but nothing can warrant the wholesale stripping of the plants, which we too often see practised. The plants should be removed from any of the baskets or blocks which are badly decayed, and supplied with new ones; although not a good time to re-basket Orchids, it is better where a basket is decayed to get rid of it than to retain it, as it will only get worse during the winter, and the fungus from it may probably kill the plant. In all cases of re-potting or basketing Orchids at this season of the year, it should be borne in mind that large pots or baskets are detrimental to the plants during autumn and winter, at which time they are safer in the smallest sizes possible in proportion to the size of the plant. In re-potting an Orchid, avoid using the crocks contained in the pot which the plant formerly occupied; the same crocks are often thoughtlessly used, and the good sought to be done to the plant by the shift is frustrated; the ill-health of a plant may often be traced to the material in which it is potted; if the crocks be examined, they will sometimes be found to be covered with a peculiar brown, hair-like fungus; this is very tenacious of life, and very destructive to the roots of the plants, and if the same crocks be used again, in a short time the fungus re-establishes itself, and the mischief is as bad as ever. Crocks which have been used may be employed again, but not until they have been washed and exposed to the weather for some time; but when fungus is observed, the crocks should be thrown on the rubbish heap or otherwise destroyed, and the roots of the plant taken out of the pot in which they were found carefully washed before re-potting. A few well-established plants may probably be found with the material in which they are potted sodden and bad; this should be carefully removed without injuring the roots, and fresh material substituted.—James O'Brien.

Trees and Shrubs.

Young plantations, if necessary, should now be thinned, and operations of this kind should always take precedence of mere routine work. Early thinning, or, in other words, the weeding out of the small, weakly, badly-shaped, or unhealthy trees that are encroaching on better ones, is a matter which should always have early attention if a healthy crop of timber be expected. It is a too common practice to put off the thinning of young plantations during their early stages of growth from time to time until the trees are drawn

up and crowded to such an extent that, when they are eventually thinned, the sudden change in the temperature of the plantation occasioned by allowing a free circulation of air, causes a check in the growth of the trees, and in many cases injures the health of the crop, hastening on premature decay and disease; and if in an exposed situation, in all probability the after-growth will be stunted. A great many of the trees also will be uprooted or blown to one side by strong gales of wind. If young plantations be periodically and systematically thinned as soon as their branches interlace and interfere with the free growth of one another, they will sustain no check; on the contrary, they will be stimulated to renewed vigour and healthy growth. When a plantation has been systematically and judiciously thinned, and the trees have attained a height of upwards of 30 ft., the subsequent thinning will have to be done very cautiously and sparingly, the trees being allowed to grow close enough to draw one another up somewhat, in order to attain lengthy timber. After each successive thinning, the hardwoods will require some attention to pruning, or, more strictly speaking, foreshortening of lateral branches and contending leaders that require restraining, so as to balance the heads of the trees. Stem or close pruning should only be done with the pruning knife when the trees are young in the nursery, preparatory to planting out. The pernicious practice of mutilating trees by amputating live limbs close to the bole is pregnant with evil results; it tends to check the growth of even healthy timber; and although the wound may be overgrown by bark, and to all external appearances the stem looks clean and the timber sound, such is not the case, for when the tree is cut up, a blemish will be found, rendering the timber where the branch was cut off useless. The injudicious practice of stem-pruning trees after they have acquired the size of timber cannot be too strongly deprecated; the old adage that "a little knowledge is a dangerous thing" is strictly *à propos* in the case of pruning forest trees. It is a common practice on some estates to saw off live branches close to the stem, with the professed object of making a clean butt of timber; it is, however, a gross mistake and a delusion to saw off live branches close to the bole, with a view to assist Nature in making clean sound timber. After a live branch has been sawn off larger than an inch or so in diameter, or when the red or heartwood has been fairly formed, the wound and the aftergrowth of woody layers will never unite, the knot will remain a piece of dead or decaying wood; and of course the larger the limb amputated the greater the blemish in the plank when the tree is sawn up. Timber merchants are alive to the injurious practice of lopping branches off trees; for, whenever they find a tree that has been so treated they pronounce it faulty, and in consequence the value of the timber is lessened. Inspectors of timber for the Government dockyards are very particular not to use trees in which there are dead knots; when inspecting the timber they are generally supplied with an auger to test where dead knots exist, and if any be detected the tree is at once condemned. "Prune not at all," said Lindley, "plant thickly, thin constantly, stop carefully, and leave the rest to Nature."—G. B.

Gathering Pears.—During the months of September and October the bulk of the Pear crop should be taken from the trees, and should at once be placed in the fruit-room to ripen. Pears are improved in quality if ripened in the house under favourable conditions, to wit, darkness, and a cool, dry, and pure atmosphere. Pears are very sensitive to surrounding odours, and if placed in a cellar with vegetables showing signs of decay, their quality is injured. When the seed of the Pear has changed from a light straw colour to a dark brown the fruit may then be gathered, and will ripen without shriveling or rot. Again, when on raising the Pear gently by hand it separates easily from its holding at the end of the stem, it may be gathered with confidence. To pluck Pears rapidly that are advanced toward ripening on the trees needs a practised eye and no small amount of experience; indeed, in many instances it will be found advisable to go over the same tree three different times in picking, and the additional labour will pay for the extra expense. Pears should aways be takenfrom the tree by hand, andnot shaken off, as is too often the case with careless cultivators. They should then be carefully placed in baskets and taken at once to the fruit-house or closet, to be laid away where the light can be excluded, with the same care, to prevent injury from bruising. There they may remain until ready for table use, with an occasional examination to remove decaying specimens. Compared with those ripened on the trees, their superior excellence will at once be evident. Some assert that the Seckle is one of the exceptions to this rule, but my own experience has not proved this to be the case. There is quite as much superiority in house-ripened Seckles as there is with those of any other variety. —Scribner.

TREES AND SHRUBS.

AUTUMN WOODS.*

The following is a synopsis of the tints of different trees and shrubs in September and October.

Division I.

Trees and shrubs that display yellow tints alone, without a purple or red leaf of any shade:

Section 1.—Verdure of summer unchanged, or with a slight and sometimes a considerable mixture of yellow leaves before they fall:—Althæa, Bayberry, Clethra, Dutch Myrtle, Elder, Locust, Privet, and Willow.

Section 2.—A general mixture of rusty green and yellow; sometimes pure yellow under favourable circumstances. The rust attaches only to dead leaves or to the dead parts of leaves:—Black Walnut, Butternut, Catalpa, Chestnut, Elm, Grape Vine, Hickory, Horse Chestnut, Lime, Plane, and White Birch.

Section 3.—Pure yellow of different shades:—Beech, Birch, Honey Locust, Mulberry, Tulip tree, Poplar, and Green Brier.

Division II.

Trees and shrubs that display all shades of purple, red, and yellow:

Section 1.—A predominance of green, with a slight and sometimes a considerable mixture of purple, red, and yellow of different shades. All the Rosaceous plants are included in this section or the following one. Individuals of some of these species are occasionally brilliant:—Apple tree, Barberry, Blackberry, Cherry, Hawthorn, Lilac, Missouri Currant, Mountain Ash, Pear tree, Peach tree, Plum tree, Quince tree, Raspberry, River Maple, Rose, and Spiræa.

Section 2.—Purple, crimson, and scarlet, with only a small mixture of yellow, if any:—Blueberry, Cornel, Hazel, Poison Ivy, Scarlet Oak, Strawberry tree, Sumach, Viburnum, Virginian Creeper, White Oak, and Whortleberry.

Section 3.—Variegated tints, comprising all shades of purple, crimson, scarlet, orange, and yellow on the same tree, or in different trees of the same species. Leaves often striated and sometimes figured like a butterfly's wing:—Mountain Maple, Red Maple, Rock Maple, Poison Dogwood, Smoke Tree, Snowy Mespilus, and Striped Maple.

Passing through all shades from a dark chocolate to violet, brown, and salmon:—The Ash.

The Buffalo Berry (Shepherdia argentea).—The Shepherdia is a shrub tree in its natural state, growing from 10 ft. to 15 ft. in height. Its foliage is silvery, or rather downy white underneath; its flowers are yellowish, and the fruit, when ripe, bright scarlet. As an ornamental shrub for the foreground of groups it is desirable, and as it bears the shears well it is often used for ornamental edging, perhaps more for its fruit value than otherwise, the fruit being acid and valued for tarts. There are two sexes distinctly shown in the buds, and both have to be grown in association to cause fruiting. A friend of the writer in the "Country Gentleman" suggests to growers of this shrub the engrafting or budding of the staminate upon the pistillate plants. So grown, one shrub or tree would be an ornament in any grounds and of value as regards fruit.

Cedrela sinensis.—According to a writer in the "Revue Horticole," the Cedrela sinensis, which was introduced into the Paris Museum some years since, has just begun to bloom in the grounds of that establishment. Its flowers, which are arranged in immense hanging bunches, remind one of those of Kœlreuteria paniculata, but they are nearly globular in form and very small. They make up, however, for their size by their number, and by the agreeable odour which they emit. It is probable that this is the first time that this tree has flowered in Europe. This very hardy, rapidly-growing species adapts itself to every kind of soil, and forms a somewhat large tree closely resembling the Ailantus, and, like it, forms a good subject for the plantation of avenues. The Cedrela sinensis has a great advantage in having its flowers delicately scented, which is not the case with the Ailantus.

The Double Rose-coloured Bramble in the Flower Garden.—This is well worth growing as a pillar plant, or to screen any unsightly object during summer. It grows rapidly. The leaves are a beautiful dark green, and the flowers, which are produced in large trusses, resemble double rose-coloured Daisies, but are of a more delicate colour. In the wild garden this Bramble would be charming, and also in any shrubbery or bank, where it could be allowed to ramble freely.—S.

* From Wilson Flagg's "Woods and By-ways of New England."

TRANSPLANTING TREES IN FULL LEAF.

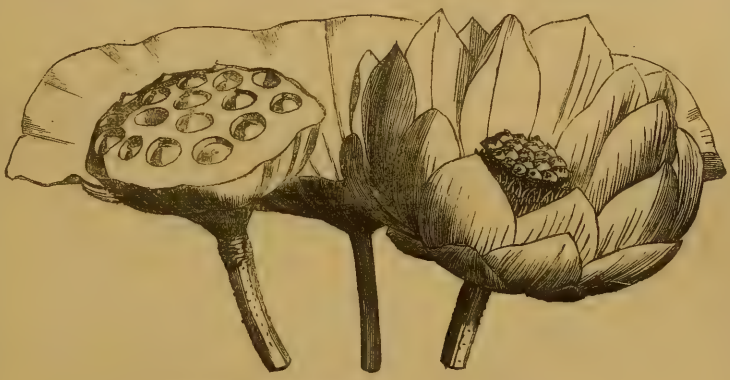
There are some good cultivators who consider August and September the safest months in the year for transplanting. I am inclined to think that early autumn is a very good time, especially for subjects like the Holly, which it is exceedingly risky to meddle with later in the season. This season, however, the weather has been much too dry for transplanting successfully, but where water is easily procurable, even the drought need be no obstacle. The worst thing about moving trees or shrubs with balls in dry weather is that the soil is crumbly and falls away from the roots, unless it is of a tenacious character; but this evil may be overcome by following a plan described in an American paper, Downing's "Horticulturist," and which is worth summarising here. The plan was first adopted by a Mr. Perkins, who moved a great number of trees in full leaf, and in some cases with the fruit upon them, during the hottest and driest season of the year, with perfect success. The trees (Pears, Peaches, and Apricots, &c.), he states, never stopped growing, but made considerable growth the same season. His practice was to cut a narrow trench, some 4 in. or 5 in. wide, and as deep as the roots, round the tree, and fill it with water, and keep it filled till the soil about the roots was thoroughly soaked. This solidified the soil, and lifting could then be performed, it is said, "with complete success." Mr. Perkins states that he lifted seventy-six trees in this way during the summer and autumn, and all but six of that number succeeded perfectly. I never had occasion to adopt the plan on an extensive scale; but, judging from my own experience, I quite believe al that is here claimed for it. Of course, the great thing in lifting trees or shrubs at any season is to secure a good ball of soil, particularly with straggling rooted subjects, as most kinds of deciduous trees are. Next, there should never be any hurry in doing the work, as is often the case when the work is entrusted to careless workmen. First of all, a good trench, as deep as the main body of the roots go, should be taken out quite round the tree, 3 ft. to 15 ft. from the bole, according to the size of the tree. This gives room to work freely round the roots with forks, and space to put aside the soil as it is removed, until the ball is reduced to portable dimensions. With regard to transplanting machines, there are many, all of them suited more or less for the purpose, and some of them rather expensive. I have lifted trees at all seasons of the year, up to the age of thirty years, and have never used anything but a mason's drag, as it is called, and I would not desire anything better. Most people know that this drag is used by masons for moving heavy stones about. It may be described as a stout platform of wood, 3 ft. or 4 ft. square, set upon low broad-tired wheels, with a stout pole in front, by which it is dragged along, and which can be used as a powerful lever in loading. In lifting a tree with it the soil is scooped out on one side of the hole, to allow the ball to be tilted back, which is easily done, and, a road having been made for the drag on the opposite side, it is backed in and let down close to and under the ball; a rope is then run round the neck of the tree and fastened to the pole in front, and with a man or two behind to lift, and others at the pole to work the lever, the tree is lifted out of the hole at once without the slightest damage, conveyed to its destination, and let into the pit prepared for it in the same easy and expeditious manner. Very tall trees must of course be kept erect when on the journey, by guide ropes attached to the stem at proper distances from the top. In the woods here a still more simple and less expensive contrivance, which may be put together by a common labourer in a few hours, is employed. This is simply a flat wooden sledge, in shape like a hand-barrow, only that the stout trams on which the loads rest are bevelled away at the ends like the rockers of a cradle, in order to admit of the sledge being slipped under the ball of the tree when it is ready for moving. A horse is then yoked to it at one end, and away it goes. Many hundreds of trees have been transported successfully on this machine during the last two years. Chef.

The Catalpa as a Timber Tree.—This, according to Landreth's "Rural Register," has been long known to a limited number to possess wood of an enduring quality for posts—as lasting, it is claimed, as the Black or Yellow Locust (Robinia Pseud-acacia)—but, fortunately unlike it, exempt from insect attack; indeed, so far as our observation has extended, it is not at all liable to disease, and as the tree grows readily from seed there need be no impediment in propagating it to any extent desired. Fence-rows, boundaries, lanes, the roadside, useless plots of ground, inaccessible knolls, might each be seized upon for planting this useful and ornamental tree. [This tree thrives admirably in an impure atmosphere, as is proved by the existence of many good specimens in London which flower abundantly.]

THE SACRED BEAN.

(NELUMBIUM SPECIOSUM.)

This is one of the most beautiful of all stove or warm-house aquatics, the Water Lilies themselves not excepted, and it is also expressly interesting on account of the associations with which it is surrounded. It is distributed all through China, Japan, India, the Malay Archipelago, the Philippines, Persia, Australia, and the Caspian Sea. At one time it might have been found plentifully in Egypt, but it is now nowhere to be seen in the Nile, though representations of it exist among the ruins of the magnificent old temples where it was formerly held in so much veneration. It has great plate-like leaves, which measure a foot or more across, and they are borne on long slender stalks, which elevate them 2 or 3 ft. above the water in which they grow. Its great rosy-petaled flowers are also produced singly at the apices of long slender stalks, and are from 4 to 6 in. in diameter. Apart from its interest and beauty the plant is of some economic value, its fleshy root-stock and seeds being eaten as food by the natives of Australia, as well as by the Hindoos and Chinese. This Nelumbium is mentioned by Strabo, Theophrastus, and Herodotus, the last of whom compared its receptacle or seed-vessel to a wasps' nest, a comparison by no means inapt. Treated as a stove aquatic, the plant is easily managed, and it flowers freely every year in the stove tropical aquariums at Kew, Chatsworth, and many other gardens.



Flowers and Fruit of the Sacred Bean (Nelumbium speciosum).

Soap-root.—A large commerce is carried on from California in a fibrous substance known as Soap-root. It is obtained from a Lily-like plant, a species of Phalangium (Chlorogalum) pomeridianum, which is to be found upon the mountains, and attains a height of 8 ft. The heavy bulb is covered with many coatings, consisting of fibres, which are used for cushions, mattresses, &c. Large contracts are entered into for the supply of this material on a very extensive scale. The inner part of the bulb serves as a substitute for soap, and it might be tried whether it can be utilised for technological purposes like the root of Saponaria.

GARDEN RECEIPTS.

Glue and Flower Gum.

Flower Gum may be made by pounding white Shellac very fine, and mixing it with methylated spirit in a stone jar to a proper consistency, well shaking it up for half-an-hour, and placing it by the side of a fire to keep the bottle warm, and occasionally shaking it for about a day. Pure spirits of wine may be used, as it does not smell so strongly as that mixed with wood-naphtha. The former does not smell after it is dry, and is much cheaper than the others. The gum may be kept in any cool place and taken out as it is wanted, leaving the camel-hair brush in the gum. In gumming never fill the brush too full, and the petals should be gummed close to the tube.

Gum for fastening specimens on paper in herbaria may be made as follows:—Take two parts of Gum Arabic and one of brown sugar, and dissolve them in water to the consistency of cream. This mixture will be found far preferable to Gum Arabic alone. At the British Museum and Kew Gardens they use a mixture of Gum Arabic and Gum Tragacanth for this purpose.

Damp-proof Glue for fastening labels on preserve bottles may be made by macerating 5 parts of good glue in 18 to 20 parts of water for a day, and to the liquid add 9 parts of sugar-candy and 3 parts of Gum Arabic. The mixture can be brushed upon paper while lukewarm; it keeps well, does not stick together, and when moistened adheres firmly to bottles. For the labels to be used in places subject to damp, it is well to prepare a paste of good flour and glue, to which linseed oil, varnish, and turpentine have been added, in the proportion of ½ oz. each to the pound. Labels prepared in the latter way do not fall off in damp places.

Liquid Glue may be prepared by dissolving 2 lbs. of the best pale glue in 1 quart of water in a covered vessel, placed in a water bath; when cool, add to it 7 oz. of commercial nitric acid; when cold put into bottles. This glue is very strong, and does not gelatinize in the cold. Marine glue is best bought ready prepared. It may be made as follows:—India rubber cut into small pieces with a wet knife, 1 oz., coal-tar naphtha (benzoli) 12 oz. Digest in a close vessel, shaking it frequently, to help the solution. When the rubber is dissolved, add 20 oz. of best Shellac, and continue the heat and stirring until perfect liquefaction has taken place, and pour the fused mass, while yet hot, on slabs of polished metal, marble, or stone. For use, it should be heated to its melting point, and applied with a brush very quickly. The thinnest possible coating should be used. Where large surfaces of wood are to be united, a thin piece of muslin should be interposed.

Gooseberry Caterpillar.

The locust-like appetite of this Caterpillar renders it most destructive to this useful fruit. As soon as they are observed means should at once be taken for their destruction, for if allowed to remain on the trees for only a few days, in addition to the injury they do, they are much more difficult to deal with. For some days after they first come to life they are comparatively tender and easy to kill. Anything of a dry, dusty nature they dislike; even dry road dust will render the leaves unpalatable to them, and cause them to drop off, but unless they are killed whilst on the ground they quickly crawl up the trees again.

Elder Leaves.—Boil a quantity of Elder leaves in as much water as will cover them until the liquid becomes quite black, then strain and cool it, and to every gallon of this liquid add 1 gallon of Tobacco-water. When the trees are quite dry apply it with a fine-rosed watering-pot, and in a few minutes the Caterpillars will fall off dead.

Foxglove Leaves.—Take a quantity of the stalks and leaves of the common Foxglove, bruise them, and throw them into a copper of boiling water, and let them simmer all night. The next morning the liquid will be the colour of porter. Its strength can be reduced by adding water. Strain through muslin or fine netting, and syringe with a very fine rose, if possible letting the liquid fall on the trees like dew. If no copper be handy, use a water-barrow; pour scalding water on the Foxglove, and cover up with sacks or mats.

Hellebore.—Take 1 oz. of Hellebore powder and 2 oz. of powdered alum; mix them thoroughly in a small quantity of water, and then add a gallon of water. Apply the mixture to the bushes affected, either by wetting them with a syringe or water-pot on the upper surface of the leaves; the Caterpillars will drop off soon after feeding upon the poisoned leaves. Hellebore powder will destroy these pests if dusted on them dry, but it cannot in this way be applied so regularly as when diluted. The principal use of the alum is to cause it to adhere to the leaves. One gallon is sufficient for from ten to twelve full-sized bushes; it is, therefore, by no means an expensive remedy. Many excellent authorities advocate the use of dry Hellebore powder, applied by means of a simple form of dredger made for the purpose. It consists of a cylinder of perforated tin 2½ in. in diameter, and 10 in. long; this has a fixed bottom, with a socket to receive the end of a handle of convenient length, and a brace to strengthen the socket; the cover fits sufficiently close to keep its place while in use. Any one living at a distance from a tinsmith could readily make a duster of this kind out of any old canister, and a wooden cover would answer as well as a tin one: care should be taken to get the Hellebore fresh, otherwise it is ineffectual. Hellebore is best applied when the leaves are wet, as, when dry, large portions of it get wasted. If obliged to apply the powder in dry weather, it is best to water the bushes first. A mixture of powdered white Hellebore and whitening may also be applied to the trees with an ordinary flour dredger, first thoroughly wetting the whole of the tree with the syringe to cause the powder to stick. The Hellebore, which should be freshly ground, as it loses its efficacy if kept long, is to be used in the proportion of 1 lb. to 6 lbs. of whitening, ground fine, and well mixed together; this will destroy every Caterpillar in a few days, even if they have grown large and strong. Hellebore being a poison, care must be taken that the whole is washed thoroughly off with the syringe or garden engine after the Caterpillars are killed.

Lime.—Air-slaked lime, if applied to the Caterpillars whilst they are young, will destroy them, but the trees should be examined shortly afterwards to see that none have escaped, more especially in rainy weather. In the winter, when the trees are at rest, put a spadeful of lime on the surface of the soil under each tree, spreading it out from the collar under the branches. This will kill the larvæ, which at this season are lying dormant under the soil, to which they have descended from the branches, after having completed the length of time they were destined by Nature to remain above ground, and from whence, if not destroyed, they will emerge and take wing, when the females will deposit their eggs on the trees, which in due course will hatch into Caterpillars.

Soot is said to be an excellent preventive if used in time. The best way to apply it is to lay a ring of soot on the ground round every Gooseberry tree close to the stem, and to the width of about 6 in. or 8 in. all round it.

Sulphide of Potassium.—Another excellent remedy is a dilute solution (one part in 500) of sulphide of potassium, the infected tree being sprinkled with this substance by means of a small hand syringe. This method has been successfully used on a large scale in Southern France.

Tobacco Powder.—Tobacco powder dredged over the bushes night and morning is as good a remedy as anything; while if the earth be trodden firmly down round the stems, the grubs will be unable to descend into it, and will become a more easy prey to their natural enemies.

Glass-cutting.

The following is an easy way of cutting glass bottles, carboys, &c., into handlights:—Pass five or six parts of coarse packing twine round the bottle on each side of where you want it divided, so as to form a groove about an eighth of an inch wide; in this groove pass one turn of a piece of hard-laid white line, and extend the two ends, and make them fast to some support; then have a tub of cold water close to, and grasping the bottle by the neck with one hand, and the bottom with another, saw the bottle backwards and forwards for a short time; quickly you will soon smell heat from the bottle, caused by the friction of the hard cord. When after about one

minute's friction, by a side motion of the bottle, throw it out of the line in the water, and then a tap against the side of the tub, the bottom will drop off. Carboys can be cut as easily, but, being larger, they require two persons to see-saw them backwards and forwards. The line of twine to form the groove must be put on quite tight, and then wetted to tighten more, so as not to shift; but let the groove and stout cord be dry. The cutting cord should not be less than an eighth of an inch thick, and the edge of the glass, after cutting, should be rubbed on a grindstone, as it is very sharp.

—— Another method of cutting glass vessels neatly is to heat a rod of iron to redness, and having filled the vessel the exact height you wish it to be cut with oil of any kind, proceed very gradually to dip the red-hot iron into the oil, which, heating all along the surface, the glass suddenly chips and cracks all round, when you can lift off the upper portion clean by the surface of the oil.

—— The bottoms of carboys and bottles can be cut off by making a slight nick with a file and then marking round with a streak of ink or water colour where you want it to come off. Make an iron red-hot and lay it on the nick. This will cause it to expand and crack, then by moving the rod round the crack will follow. When the carboys are rather large, it is better to have two rods heated, or while you are reheating the iron, the crack might take a transverse direction.

Grafting-clay, or Onguent de St. Fiacre.

This primitive composition consists of 2 parts of clay and 1 part of cow manure. It is held on the graft by means of packthread or a piece of rag, and presents the form of an oblong bark. Some persons put a strip of bark between the cut and the composition to prevent the latter from penetrating into the clefts. Others mix finely-chopped hay or Grass with it to give it more consistency. Two thousand years ago authors recommended the covering of the "kneaded luting and glue of the graft" either with a Borage leaf or with Moss. Grafting-clay is much used in many country places, and is an economical composition, especially for the grafting of all sorts of old trees.

Grafting-wax.

In grafting it is necessary to cover the wounds and cuts with an unctuous composition which will not have the effect of drying up or burning the wound, nor of running or cracking under the action of the air or from being badly made. This must be applied copiously and without stint to the wounds and clefts of both stock and scion when the graft is fixed in position. A well-executed graft may fail in consequence of the bad quality of the wax. Those modes of grafting in which no cut surface is exposed to the air, bud-grafting for instance, do not require any application of this kind. The composition of grafting wax varies greatly, every grower having his own particular recipe, which he considers superior to all others. The base is usually Burgundy pitch, black pitch, bees'-wax, suet, and resin. To these ingredients some add ochre, hog's lard, flowers of sulphur, Venice turpentine, or sifted cinders. All are melted together over the fire in an iron pot, and the composition should be allowed to cool before it is used. Practice makes it easy to judge of the proper proportions of the ingredients; the pitch tends to thicken the composition, the suet to make it lighter, the resin imparts dryness to it, and the bees'-wax gives it oiliness. The following mixture is in high repute at the establishments of MM. André Leroy, of Angers, and Baltet Frères, of Troyes:—First, melt together, resin 2 lb. 12 oz., Burgundy pitch 1 lb. 11 oz.; at the same time melt separately, suet 9 oz. Pour the suet, when thoroughly melted, into the first mixture, stirring it well while doing so; then add 18 oz. of red ochre, dropping it in gradually in small portions, and stirring the whole up for a good while. Whatever composition may be used it should always be unctuous, easily worked, and free from acridity, and is best applied lukewarm, rather cool than hot, and when of a consistency approaching the liquid rather than the solid. It is brought into this condition with the help of a small portable stove, heated like a warm bath, or with a spirit-lamp, or by any of the common methods. It is applied with a small paint-brush, or a stick with a rag wrapped round the end, or, better still, with a wooden spatula. The warm mastic is an economical kind for large operations, and is preferable to the cold mastic for autumn grafting, as the frost has been found to have less effect upon it. The following is a simple recipe:—Melt together in a kettle 1 lb. of tallow and 1 lb. of bees'-wax, then 4 lbs. of resin; when melted pour it into a pail of water and pull it till well mixed. Another good mixture is made of 3 parts of resin, 3 of bees'-wax, and 2 of tallow; but it is cheaper to use more resin, and a common mixture consists of 4 of resin, 2 of tallow, and 1 of bees'-wax. The resin causes this to adhere a good deal to the hands.

—— The inconveniences that always attend the use of warm compositions, and the trouble of making them, have brought very much into fashion cold mastics, which soften under the heat of the hands, or remain unctuous from the nature of their composition. Up to the present time no cold mastic can compete with that of M. Lhomme-Lefort, manufactured by his son at Belleville, Paris. This mastic is sold in tin boxes, in which it preserves its pliability, even after the box is opened. It is spread on the graft with a spatula, and should it be necessary to touch it with the fingers, these should first be wetted. Once exposed to the air, it hardens a little. It does not crack with frost nor run in hot weather, and is the best composition that can be used. We have seen in Germany a cold composition invented by M. Lucas, pomologist. This is made of Burgundy pitch melted over a slow fire. Into this is poured the third of its weight of alcohol of 90°, stirring the mixture constantly with a stick. The only drawback with cold mastics is that they do not harden sufficiently in winter when they are applied in autumn: then the frost, having an advantage over a soft substance, can reach the tissues of the tree thus insufficiently protected.

—— The following is a receipt for making Lefort's Liquid Grafting Wax, which is highly commended in France, where it was invented, and until lately kept secret. Melt 1 lb. of common resin over a gentle fire. Add to it 1 oz. of beef tallow and stir it well. Take it from the fire, let it cool down a little, and then mix 8 oz. of alcohol. The alcohol cools it down so rapidly that it will be necessary to put it again on the fire, stirring it constantly. Still the utmost care must be exercised to keep the alcohol from getting inflamed. To avoid it, the best way is to remove the vessel from the fire when the lump that may have been formed commences melting again. This must be continued till this is a homogeneous mass, similar to honey. After a few days' exposure to the atmosphere it assumes a whitish colour, and becomes as hard as stone, being impervious to water or air.

Herbarium Insects.

Most Herbariums are infested with the larvæ of the Dermestes and other beetles which, if not checked, speedily reduce the specimens to a few pinches of dust. Various remedies have been tried, the most efficacious being corrosive sublimate and camphor. Some persons are in the habit of applying a solution of corrosive sublimate for the purpose of washing over their plants when mounted, and so preventing the development of animal life. The solution in use at the Kew Herbarium is composed of 1 lb. of corrosive sublimate and the same quantity of carbolic acid to four gallons of methylated spirit; this fulfils the purpose for which it is intended very well, but is somewhat disagreeable to use. At the British Museum it is found that the presence of camphor, frequently renewed in each cabinet, is sufficient to prevent the attacks of insects. It will soon be discovered that some plants, such, for example, as the Umbelliferæ and Grossulariaceæ, are peculiarly liable to such attacks; and these orders must be inspected from time to time, so that any insect ravages may at once be checked.

—— Dr. Rothrock, an American botanist, dissolves 1¾ oz. of corrosive sublimate in one pint of alcohol, to which he adds two and a-half fluid drams of carbolic acid, and applies the whole by means of a paint-brush. His own collection of 15,000 plants was treated with this preparation five years ago, since which time not a single insect has made its appearance. Damp is to be avoided in the situation of the Herbarium, as it favours the development not only of insects, but of mould, and renders the specimens rotten.

House Flies.

One of the most effective Fly poisons is made by dissolving 1 drachm of white arsenic in 1 pint of hot water. When cold sweeten the solution with brown sugar, treacle, or honey. The above is a dangerous composition, and should never be used where children or domestic animals can have access to it. The following are quite safe, but not so killing:—Quassia chips, ¼ oz.; water, 1 pint; boil for ten minutes, and add 4 oz. of treacle. Flies will drink this with avidity, and are soon destroyed by it. Another good mixture is made by adding a teaspoonful of finely-powdered black pepper and two teaspoonfuls of brown sugar to four teaspoonfuls of cream. It is a fact not generally known that Flies will not pass through a netting made of fine silk wire, although the meshes are many times larger than the body of the Fly, except there is a window behind it. The cafés in Rome and Naples are kept quite free of Flies in the summer by means of such a netting hung before the door. White tape dipped in sugar and water, say 2 oz. to the pint, and suspended in festoons from the ceiling, make an excellent Fly-trap, and is almost better than Fly poisons, for it generally happens that every Fly that is killed has half a dozen relations, who come from outside to weep over his corpse. Papier mouré is bibulous paper, soaked in a solution of cyanide of potassium. This is also a dangerous preparation.

Insects in General.

Although the principal insect-pests which trouble the farmer and gardener are treated of under their particular headings, it may be useful to say a few words on insects generally, and the best means of destroying them. Preventive measures are after all said and done, the best weapons in the gardener's armoury. Towards the beginning of the month of February, or even earlier if the winter be a mild one, in order to prevent future mischief and assure the gardener that anything he does in the early part of the year is like nipping a disease in the bud, and a hundred times more valuable than anything he can do at a later period when his enemies, if more apparent, are more numerous and more rampant. In digging, he will meet occasionally with brown, long, barrel-shaped chrysalids in the earth, from ½ in. to 1 in. in length. These he may safely treat as enemies. It will also repay him well to turn up with a fork the earth and Moss at the roots of any trees in the neighbourhood of the garden in quest of chrysalids. Let him also search in outhouses and sheltered corners for those chrysalids which do not hybernate in the ground. We strongly advise the young gardener to put any he may find aside in a place where he can see them come out, not so much to make him an adept in entomology, but that he may learn at least the principal forms that come out of the different chrysalids. If he pin a sample or two neatly and puts them away in a box or drawer it will do him no harm, and the knowledge he thus acquires will not be thrown away. In the chinks of trees—especially fruit trees—many nascent evils now lie hidden in the form of eggs, and in orchards where fruit suffers much from that kind of vermin this is the time to go over the branches with a nail-brush and Gishurst soap and water. There is a capital kind of nail-brush now made of Palm fibre (3d. each), strong and durable, which the gardener would do well to provide himself with. In the early part of the year, too, he ought to look over his fruit and other trees for indications of the various blights, and many a hidden foe may be discovered by cutting across a suspicious-looking twig or branchlet, when the beautiful yellow-spotted caterpillar of the leopard moth, the large claret-coloured caterpillar of the goat moth, &c., may be met with in their wonderful tunnels. With regard to insects in stoves and greenhouses there seems great reason to believe that insect and parasitical attacks are, with a few exceptions, a consequence of ill-health arising from some other cause; keep up the vital energy, therefore, by thorough ventilation, full exposure to light, a moderate temperature, judicious watering and mulching, and you will effect more than all the scrubbing and painting in the world. Amongst the natural checks to the increase of insects, birds of all kinds must be placed foremost; the gun should therefore be used with moderation. Chickens, ducks, and seagulls have been allowed to run loose in orchards and gardens with excellent effects. The common toad, too, is a voracious feeder on insects, as well as snakes, wasps, and spiders. One of the most potent natural enemies of insects is the dried and powdered flower-heads of the Pyrethrum roseum and P. carneum, sold under the name of Persian Insect Powder, Insecticide Vicat, Dumont's Insect Powder, &c. The specific property lies in the pollen, and it is according to the proportionate amount of it that may be in the powder that it is more or less effective. The manner of using it is to scatter the powder about the roots and over the leaves of the plants affected. It has the effect of causing the insects to fall down as if dead or asleep, even bees and wasps succumbing under its action; the larger insects, however, by-and-by recover as if coming out of a swoon, the smaller never come out of it. The commercial insect powder is very liable to failure, being adulterated with sawdust or the dried and powdered flowers of some of the Anthemidæ, but a powder prepared as follows from the Pyrethrum roseum is most effective against moths, fleas, bed bugs, and poultry vermin, and other insect plagues. Seeds of the Pyrethrum, which are obtainable from large seed dealers, are to be sown in May, not too thickly, in a well-cultivated bed, and if the weeds be kept down will develop into strong plants by the autumn, although they seldom bloom before the next May or June. The flowers are to be plucked as they become fully developed, and the yellow disc-flowers separated from the red ray-florets, thoroughly dried in the shade, and finely pulverised. Flowers can be plucked even in the autumn, so that a few plants will produce a considerable quantity of the powder. As the plant is perennial it can be propagated by division, and since it is indigenous to the Caucasus, it is not damaged by a low winter temperature. There are other powders which are also destructive to insects, but not to the same extent as P. carneum and P. roseum. The true kind made from P. roseum or P. carneum is rarely to be met with at all. It is not difficult to distinguish between powder made from these species and powder made of other Anthemidæ, provided they are both genuine, and composed of the pollen in which the virtue chiefly resides. Under the microscope the pollen spores of Pyrethrum roseum, for example, have needle-like projections, while those of the Anthemidæ have been rounded. But the fact is, in the majority of samples no spores of pollen are to be seen at all. Mr. Andrew Murray has examined a number for the purpose of endeavouring to determine from what species the powder has been manufactured, but he failed in discovering it. In no instance did he find any pollen at all—nothing but broken fragments of epidermis, of leaf, flower, or branch. Another test is the scent. Good powder has no scent, and the colour should be a dull, dirty drab.

—— Poke Root (Phytolacca decandra) is also destructive to insects. Dr. F. C. Renner, of Frederick County, Maryland, writes to the Department of Agriculture at Washington, that several years ago he collected some Poke Root for medicinal purposes, and placed it in various parts of the house to dry. After several days he observed that there were many Cockroaches lying dead, and upon examination he found they had partaken freely of the Poke Root. Some of the Root was placed near their haunts, and the result was that it rid the premises of those insects. Since then he has communicated the remedy to others, who have tested it with satisfactory results.

—— According to M. Charles Baltet, the celebrated fruit-grower of Troyes, the Eucalyptus is a most efficient insectifuge. In a letter to the "Illustration Horticole" M. Baltet says:—"Lately my brother-in-law, Captain Mignard, being very much disturbed in his sleep by Mosquitoes, took it into his head to place a young plant of Eucalyptus in his bed-room over night. From that moment the insects disappeared, and he slept in comfort. I have been following his example with the same result. Should this really prove generally efficacious, our southern provinces will be freed of one scourge. People will use young plants of Eucalyptus instead of Mosquito curtains." A few Tomato plants trained across the windows will also have the same effect.

Onion Fly.

Many remedies for the Onion Fly (Anthomia ceparum) have been suggested and tried with various success. Curtis mentions the following, viz.:—Dressing the beds with nitrate of soda, covering them with a layer of ½ in. of charcoal, mixing

it with the earth before the seed is sown; spreading or sprinkling with coal-dust, lime, soot, salt, or watering them with a strong decoction of Worm-wood, soap-suds, &c. These do not seem to have done much good. Mr. Knowles has tried most of them without effect. Rolling where the soil is light has been recommended; such a soil seems to be more favourable to the development of the Fly than that of a stiff, clayey nature, through which it is more difficult for the mature insect to make its escape on emerging from the pupa; and that many must perish in soil of this description is obvious from the fact that numbers of pupæ have been found imbedded in the clay several inches underground, from which it would have undoubtedly been impossible for the Fly to get out under ordinary circumstances. Curtis speaks of pulling up the affected bulbs, whose state is first shown by the yellow drooping leaves, and destroying them at once, to prevent further damage, as one of the most effectual cures, as it is hopeless to think of saving the Onion when the grub has established itself in it. The course recommended by Mr. Andrew Murray is for the cultivator, at the time when the Fly appears in April or May, to keep a very sharp look-out and to destroy the first brood, which is his only chance. Let him pass his hands gently over the leaves, and if he find any eggs, let him remove them or crush them gently by hand. If he watch at the right time, it is only a week or ten days' daily examination. It is, perhaps, impossible so to watch on very large crops, although even then, where it has once been found that the eggs are being laid, we think it would be money well laid out to employ many female hands to go gently over the leaves and draw off or squeeze the eggs. M'Intosh recommended that before sowing the ground should be watered with the following mixture;—To 20 gallons of rain-water add 1 peck of unslaked lime, ½ peck of soot that has not been exposed to moisture, 2 gallons of urine, 1 lb. of soft soap, and 2 lb. of flowers of sulphur. When the mixture has settled sufficiently to pass through the rose of a watering-pot, it may be applied. It has also been recommended to sow Onions on ground previously occupied by Turnips as a preventive of this pest. Nitrate of soda is not only to kill the grub but to improve the crop. It should be used in the proportion of about 4 cwt. to the acre, and not more than two or three times a season. In using the nitrate of soda, it is necessary that the foliage of the Onions be dry, as to let it drop on the plants when they are wet causes a burnt or shrivelled place wherever it touches them. It is a good plan to water after sowing it, or to select a time when a shower may be expected when going to use it.

Make some strong lime-water, and add to it as much soot as will make it into a thin paint, and with this water the crop the moment the maggot appears. This soot mixture is so stimulating a manure, that it should always be used to increase the weight of the crop. House-slops mixed with lime and soot would be still more powerful, both to destroy the maggot and improve the plant; but unless rain followed immediately, it would be advisable to drench the ground with pure water the day after application. Ground intended for a crop of large Onions should be prepared in the autumn, and after being dug over should be watered with a mixture of sulphuric acid and water, made so strong as to burn the tongue. This will destroy every animal in the soil, and the winter rains will wash it away entirely before spring.

The Onion is much more subject to the maggot in light soils than in heavy land, especially in old worn-out gardens. Various remedies have been recommended for its destruction, or as a preventive to its spreading; but nothing appears to be of any use after it once attacks the crop. By a judicious preparation of the soil its attacks are rendered less frequent. In light land, the addition of liberal quantities of new soil, with a good dressing of salt (½ lb. to the square yard), applied as a surface-dressing during the autumn or winter, with an inch of soot pointed into the ground before sowing, renders the crop less liable to its ravages. It would appear from the result of careful experiment that the smell of soot is very distasteful to the Onion Fly, and generally prevents it from depositing its eggs; but, whenever any of these troublesome pests have come to life, the soot-dressing so frequently recommended will not be found a sufficient safeguard against their insidious attacks.

Orchid Beetle.

There are certain descriptions of Beetles which are most destructive to Orchids. If allowed to get to any considerable head amongst these plants the damage done in absolute value becomes a serious matter. They attack the flower-spikes whilst young and tender, and the young growths; still worse, so far as weakening the plants, is the destruction of the roots. When we consider the value of many of the rarest of these plants, the necessity of unremitting attention in the destruction of these pests will be apparent. The moment they are disturbed the astonishingly rapid powers of motion possessed by these Beetles is brought into play. Their movements, especially in the night when a light is brought to shine upon them are almost equal to those of a bird. They secrete themselves amongst the drainage of the pots, in the material in which the plants are growing, when it is dry whilst the plants are at rest, in cracks in the walls where the mortar has become displaced, near the pipes, or in any out-of-the-way place. They increase fast, and when once they gain access to a plant-house are very difficult to thoroughly eradicate. The thick, fleshy roots of Vandas, Aerides, and Saccolabiums in particular, become a prey to them. They never feed in the daytime, and are rarely seen during the daylight unless disturbed from their haunts; consequently they may exist in much larger numbers in any place than is supposed. By diligent searching with a lamp after dark some may be caught, but more will make their escape. Small pots containing treacle and water mixed in equal proportions placed about their haunts are sometimes used. By such means some may be caught; but with means of this description in plant-houses it is difficult to catch them in sufficient numbers to keep them down so low as desirable. To get rid of them entirely Mr. T. Baines recommends Roth & Ringeisen's Beetle Poison, obtainable through any druggist.

Labels.

Few labels are better than those made of zinc, provided their oily surfaces are carefully cleaned with fine emery paper before writing upon them. Their permanency, however, may be very much extended by warming the label after it is written, and rubbing it over with a paraffin candle. This protection to the writing is found to be very effective. It is a good plan to coat the label with white hard spirit varnish, as the photographers do their negatives. The label should be heated till it is just too hot to touch. Muriatic acid may also be used for cleaning the zinc, but emery paper is handier. The following is a good formula for ink for writing on zinc labels:—Take of verdigris and sal ammoniac each 2 drachms, lamp-black 1 drachm, water 4 oz., to be well mixed in a mortar, adding the water gradually. It must be kept in a glass-stoppered vial. Write on the zinc with the ink, after shaking it well, with a quill pen. When once it is dry the writing may be exposed to the weather or buried in the ground for years, and it will be as legible as when first written.

—— The following method of preserving wooden labels that are to be used on trees or in exposed places is recommended in a German paper. Thoroughly soak the pieces of wood in a strong solution of copperas (sulphate of iron), then lay them, after they are dry, in lime water. This causes the formation of sulphate of lime, a very insoluble salt (gypsum) in the wood. The rapid destruction of labels by the weather is thus prevented. Bast, mats, twine, and other substances used in tying up or covering trees and plants, when treated in the same manner, are similarly preserved. At a recent meeting of a horticultural society in Berlin, wooden labels thus treated were shown which had been constantly exposed to the weather during two years without being affected thereby.

—— Excellent labels for trees and shrubs may also be made by stamping the name on pieces of soft sheet-lead. If firmly fastened to the tree when planted they will last for an indefinite period, and, practically speaking, they are indestructible.

—— A method of marking labels invented by Mr. Green, late gardener to Mr. Wilson Saunders at Reigate, has much to recommend it. A small T-shaped cast-iron label is used. It is first painted white, and allowed to dry thoroughly, and then painted black. When the black paint has skinned over, the name of the plant is written with a fine but round-pointed bit of iron, thus exposing the white surface below. In this way

effective lettering is produced, and the labels being black are not at all so offensive to the eye as whitened ones.

Mealy Bug.

Mealy Bug (Coccus adonidum) is one of the worst enemies with which the cultivator of stove plants has to wage a warfare. It multiplies so rapidly, and is so tenacious of life, that unless the utmost vigilance be exercised and remedial measures resorted to, it will soon spread over a house of plants, and do considerable injury. The Mealy Bug resembles small tufts of white cotton wool, and is exceedingly troublesome when it finds its way to Grape Vines, for if allowed to spread—and it is no easy matter to hold it in check—it will render the crop quite worthless. The insect will live through the winter on greenhouse plants; but here it increases so slowly and spreads so little, that it does not do much harm, further than that when stove and greenhouse plants are mixed for decorative purposes, there is danger of the bugs getting from any infested greenhouse plants that happen to come in contact with the occupants of the stove. The worst circumstance connected with Mealy Bug is, that it does not alone exist upon plants, but it gets into the woodwork, under the lights, cracks, and joints, into the rafters, and even the brickwork; consequently, if all the plants in a house infested with it were thoroughly cleaned or destroyed, it would be sure to make its appearance on any fresh ones that were introduced into it. It will also live upon almost any description of plant grown in heat in the summer season, or, even in winter where much heat is used. It increases very fast, and, if left unmolested, to such an extent as to virtually smother the plants; its excrement coating over the surface of the leaves, clogging up the pores almost as completely as if they had received a coat of varnish. Mealy Bug is, by far, the most difficult insect to thoroughly eradicate where once it gets established; and there is no possibility of its complete destruction, except by persistent action, until every trace of it disappears.

On Cucumbers and Melons.—Upon Cucumbers and Melons Mealy Bugs thrive apace, and the plants will not stand any dressing sufficiently strong to kill them. It sometimes happens that plants affected cannot for a time be spared; then it becomes necessary to keep the insects as well under as possible with the sponge and syringe, using clean tepid water; but wherever the plants can be done without the best plan is to destroy them, giving the house a thorough cleaning before starting a fresh lot.

On Figs.—In the Fig-house they are more difficult to deal with, as the young fruit are liable to drop off through the application of any dressing that will kill the insects, yet there are not so many hiding-places on the bark of Figs as upon Vines. As soon as the leaves are off give three dressings with Abyssinian Mixture, using it at 4 oz. to the gallon. If this be carefully applied it will effectually destroy the Bugs. The house must undergo a similar cleansing to that recommended for Vineries.

On Pine-apples.—It is so difficult to eradicate Mealy Bug from Pine-apples that some growers burn the infected stock, and after the house has been thoroughly cleaned, painted, and whitewashed, make a new beginning with suckers obtained from a thoroughly clean stock.

The following remedy may be used in mild cases;—Boil 1 lb. of Tobacco in a gallon or two of water for an hour or so, and when settled pour off the liquor; melt 1 lb. of soft soap and 1 lb. of size or glue in warm water; take 1 lb. of flowers of sulphur, mix it up into a paste with the soap and glue, so that it will easily mix with water afterwards; add to it 1 gill of turpentine; mix the whole well in a tub containing about 12 gallons of water, at a temperature of 125° to 130°; stir it well about, and continue stirring; then take the Pine plants and syringe them with the liquid, seeing that every plant and every axil are thoroughly washed and wetted. Let them drain into a tub, and set them aside top downwards to drip and dry. In a day or two syringe them again with clear water at 120°; drain again, and when dry plunge in a genial bottom-heat, after having renewed the beds, and whitewashed and painted, and thoroughly cleaned the house. These directions are for plants in pots.

On Stephanotis.—It is difficult to completely eradicate Mealy Bug when once it has got established, but with perseverance it can, nevertheless, be accomplished; and it is more easily destroyed on Stephanotis than on most other plants, owing to its being able to bear, without injury, an application of insecticide sufficiently strong to kill the insects. Remove the plant from the wires, and immerse its head in Stevenson's "Abyssinian Mixture," 8 oz. to the gallon; repeat this two or three times in the course of a fortnight. Paint the house thoroughly; limewash the walls; remove the surface soil from the beds, if any; also tan, or other plunging material; in short, leave no lurking places in which the insects or their eggs can find a lodgment. Dip and wash all plants in the insecticide repeatedly, as recommended for this insect. This, if carried out, will effect its complete destruction.

On Stove Plants.—In the case of Stove Plants, almost the only course that can be taken is to overhaul them, and wash away every cluster of the pest with the aid of a small hard brush, water, and soft soap. This must be done several times in the course of the year, in fact, as often as may be necessary. Mr. Jordon, of St. Louis, says in the "Gardeners' Monthly," that he has removed these pests from thousands of the most delicate stove plants without injury to the latter, simply by applying frequently for a few weeks spirits of wine diluted with 5 per cent. of water. The most convenient equipment, he thinks, is a fine brush put through the cork of a wide-mouthed bottle. By using camphorated spirits reduced with water, the most delicate-foliaged stove plants may be operated on without injury. It, however, requires careful and frequent attention to get rid of this pest, and the mixture is best used with a soft brush or a small piece of sponge tied to the end of a stick and washed on as softly as possible.

On Vines.—Grape Vines infested with Mealy Bug must be frequently examined when they are in full growth, and the clusters of the pest be brushed away. At the winter-pruning well wash every particle of the wood, and then dress it with a mixture prepared as follows:—To 10 quarts of water add Tobacco ½ lb., sulphur 1 lb, soft soap 1 lb., and a table-spoonful of spirits of turpentine. To properly mix the several ingredients, boil first of all the Tobacco for twenty minutes in about three quarts of water; then with a little of this water, whilst quite hot, work the turpentine, sulphur, and soft soap into a paste, and when they have been well mixed gradually pour upon it the remainder of the boiling water, and finally add sufficient clear water to make ten quarts in all. The Vines must be painted all over with this mixture, and sufficient care taken to avoid rubbing or in any way injuring the buds. Those who may be anxious to avoid the trouble of preparing the above mixture can dress the Vines with Gishurst Compound, in the proportion of 8 oz. to the gallon of water, with sufficient clay added to make it of the consistency of paint. To amateurs with but little time on their hands the mixture of Gishurst can be strongly recommended.

—— Another remedy is to fumigate the plants when they are dry for several nights running, and next morning syringe over and under the leaves with soot-water, holding 1 lb. of size in solution in four gallons of water. For strong, hard-wooded plants use a size solution, containing 1 lb. of size to the gallon of water, and daub the Bug with a brush wherever it shows itself.

Tomato Sauce.—I am anxious to get a recipe for making Tomato Sauce, to be bottled and kept similar to that made by Crosse & Blackwell. I have grown some very fine Tomatoes this season, and I cannot find a recipe for making them into Sauce, except such as is intended to be used at once. Can you help me in this matter?—C. B. H. [Try the following:—Scald the Tomatoes and remove the skins, set them in a dish and sprinkle them with salt in the proportion of ½ lb. to a gallon of fruit. In three days press all through a sieve, and to every quart of juice add 2 oz. of Shallots and ½ drachm of Black Pepper. Simmer gently for half an hour, strain through a sieve, and add Mace, Allspice, Ginger, and Nutmeg, of each ¼ oz.; a couple of pinches of Coriander seed is also an improvement; simmer once more for ten minutes, strain again, and cool. The Sauce will be ready for bottling in a week. The Tomato Sauce sold in the shops is generally coloured with cochineal, the colouring matter of which is quite harmless; about ¼ oz. would be sufficient for the above quantity.—Q.]

THE KITCHEN GARDEN.

THE CARDOON.

This is a native of South Europe, and in appearance somewhat resembles the Artichoke; its flowers, like those of the latter, are of a beautiful bright blue, but the foliage of the Cardoon is more glaucous than that of the Artichoke. The Cardoon is largely grown by the French, who prepare it in such a manner as to render it one of the most delicate of vegetables. The Cardoon, if treated in the same manner as Celery, will generally be found to succeed: the only difference there is exists in the blanching, which requires rather more care and trouble than are generally bestowed upon Celery. Thorough blanching is, however essential, in order to bring out the delicacy of flavour possessed by the Cardoon, without which it is worthless. It is better to have small heads well blanched and crisp than to have large rank ones half blanched, and consequently tough and strong. In order to have good tender heads, it is necessary to grow the plants from the beginning to the time of blanching without a check, and this can only be done by planting them in deep, rich soil, and keeping them well supplied with water at the roots during dry weather.

Sowing and Planting.

Where Cardoons are in demand early in winter, it is necessary to sow seeds of them in heat early in March, and to transplant in either May or June, according to the weather. For this purpose seed may either be sown in small pots, and placed in a warm house, or sown in drills 4 in. or 5 in. apart in a gentle hot-bed. The former plan is, however, considered to be the best, inasmuch as the plants can be more easily removed when required to be hardened off, and they are not so liable to a check when transplanted as when lifted out of a bed. The best-sized pots for the purpose are 4-in. ones, in each of which should be sown four or five seeds, thinning out the plants as they advance in growth, and finally leaving only the strongest one. They should be placed close to the glass, where they will get plenty of light and air to keep them strong and stubby, gradually hardening them off early in May, and towards the end of the month they may be transferred to the trenches in which they are to grow if the weather be favourable, planting them from 2½ ft. to 3 ft. apart in the row. It is a bad practice to sow too early, as the plants become pot-bound before they can be planted out, and consequently become checked in growth. A second sowing may be made in May in open trenches, and the main sowing early in June. The trenches should measure at least 4 ft. from centre to centre, and be dug 2 ft. wide and 18 in. deep. Into the bottom of these should be placed 2 in. or 3 in. of good rotten manure, which should be dug in with a fork, and well incorporated with the soil in the bottom of the trench. The seeds should then be sown in patches from 2½ ft. to 3 ft. apart, and slightly covered with fine soil well watered, and flower-pots should be placed over them until the plants are up, when they may be removed, and the weakest plants gradually thinned out, eventually allowing only the strongest to remain. The subsequent treatment consists in keeping them well supplied with water at the roots until the end of September, when they will have nearly completed their growth, and when they will require moulding up. Those planted earlier will, however, be ready before that time, and should be earthed up as early as possible, the aim in this case generally being earliness rather than large heads. Earthing up should be performed on a fine day, when the foliage of the plants and the soil are dry. The leaves should be carefully brought to an upright position, and then placed neatly together, and tied with broad pieces of matting. A good armful of dry hay or litter should then be placed round the base of each plant, and secured by strong hay-bands being wound round it, gradually narrowing to the top, leaving only the tips of the leaves bare. This done, the soil between the trenches should be turned over and well broken with the spade, and afterwards placed equally and firmly round the plants, forming an even ridge by beating the sides with the back of the spade. The plants will be well blanched and fit for use four or five weeks after earthing. Blanching may also be done by placing a drain-pipe over the plants, after tying the leaves closely together, the apertures between the plants and pipes being filled with sand. This plan, though a good one, is generally considered too expensive where many plants are grown. Many lift their Cardoons on the appearance of severe weather, and place them in dry cellars or sheds from which frost is excluded. This is, however, really unnecessary so far as the plants are concerned, as they can be effectively protected by placing litter, &c., along the ridges, but there is one great advantage in lifting them, and that is, they are easy to get at during hard weather, whereas those left out-of-doors sometimes cannot be dug out without a great deal of labour.

Varieties.

There are several varieties of Cardoons, the principal ones in cultivation being the Spanish and common kinds. The former has large spineless leaf-stalks, which are tender and solid when cooked. The common Cardoon is not so good, inasmuch as the plant is more liable to run to seed, and is not so tender when cooked. There are also the Tours, the Red-stemmed, and Purvis Cardoons. The Tours variety, which is extensively grown in France, has leaf-stalks thickly set with long, sharp spines. The French prefer this variety to all others, on account of its large, thick, tender ribs, and the plant is hardier, and not nearly so liable to run to seed as the other kinds. Cardoons are generally trimmed, washed, and cut into small pieces, say from 4 in. to 6 in. long, and put into a saucepan of cold water. When the water boils they are taken out, and the skin removed by well rubbing them with a dry cloth. They are then washed again, and boiled until tender in good stock or broth, and served hot with brown sauce. Marrow, placed round them when served is a great improvement.—S.

Pruning Tomatoes.—Many find much profit in pinching back the branches of Tomatoes, and it is a good practice when judiciously done. It may, however, according to an American writer, be overdone, and injury be the result. In the first place it is of no use to attempt it after the flowers have fallen. The idea is to force the nourishment into the fruit at the earliest start, for it is at that time that the future fate of the fruit is cast. A few leaves beyond the fruit is an advantage. It is only the growth that is to be checked; and then much damage is done by taking off the leaves as well as the fruit. The Tomato plant needs all the leaves it can get; it is only the branches that are to be checked in their growth. No one who has not tried it can have any idea of how valuable the leaves are to the Tomato plant. One may for experiment take off most of the leaves of a plant, and he will find the flavour insipid and in every way poor. Of course it is the peculiar acidity of the Tomato that gives it so much value to all of us, but the acid from a Tomato that has ripened under an insufficient amount of foliage is disagreeable to most tastes.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Carter's Commander-in-Chief Pea.—I find this variety fully equal to the description given of it, its pods, which are very large, being filled with beautiful large, deep green Peas of excellent quality. As a mid-season kind I consider it a decided acquisition.—J. Groom.

Dr. Maclean Pea.—This is one of the best of new Peas sent out lately. It grows about 3 ft. in height, and produces well-filled pods, most of which contain nine large, finely-flavoured Peas. Where sticks are scarce this Pea will be an acquisition, for it is both dwarf and prolific.—H. H. Thornberry.

International Kidney Potato.—This variety has well maintained its character as the best and most productive of all white kidneys. It is one of Mr. Fenn's recently-raised seedlings, and is the produce of a cross between the Early White Kidney and Dawe's Matchless. Those who saw the fine samples it produced last year will not soon forget it, and, although the season has been a bad one for the Potato, it will be found in fine form again this year.—A. D.

Sutton's King of the Ridge Cucumber.—This is a new ridge Cucumber, well worth the attention of market growers; the produce is about twice the size of that of the ordinary sorts, and the plants more robust and exceedingly prolific. I saw it growing recently in the kitchen gardens at Heckfield, where it is regarded as the best ridge Cucumber that has ever been grown there.—A. D.

Victoria Dwarf French Bean.—According to the "Florist" this is a robust-growing Bean of free-branching habit, and one of the best sorts for a main crop. It is, or has been, known in the trade as Polley's Prolific. The Victoria Dwarf, owing to its robust-branching habit, is one of the most continuous of podders, and only needs frequent gathering to keep it in full bearing. The ripe seed is of a long, narrow form, dull white, with a black spot around the eye, so far distinct from other Beans as to be easily recognised in this way. Its pods are long, narrow, and straight, and are both fine and handsome; still farther, it is of excellent quality, and well worthy of general cultivation.

SOCIETIES AND EXHIBITIONS.

DUNDEE INTERNATIONAL HORTICULTURAL EXHIBITION,

Sept. 7th, 8th, and 9th.

This was an exhibition, the magnitude and importance of which can scarcely be over-rated. Some idea of its proportions may be formed when we state that the entries in the different classes numbered 2957, and that nearly all the best plant and fruit growers in Scotland contributed their best productions, as did also many from England. In the fruit department alone there were over 740 entries. The display of Grapes was immense, and of excellent quality, although not remarkable as regards weight. One—and the most essential—element to success in these North Country Shows is the enthusiastic determination which seems to actuate all who are in any way concerned in their promotion. The prize list was on a liberal scale, close upon £1100 being offered, besides silver cups and medals. Everything, indeed, was done that could in any way give importance to the show, which was opened by the Lord-Lieutenant of the County, Lord Strathmore, who supplemented the principal prize of £15 for a collection of fruit by giving a £20 gold cup, and upon ascertaining that his gardener, Mr. Johnston, had won it, most liberally at once signified his intention to present the winner of the second prize in the same class with a cup also. The show was held in the Drill Hall, and a large area adjoining covered in for the purpose. There was an immense length of staging, but both this and the intervening space was much too narrow either for showing the plants off to the best advantage, or for admitting the great concourse of people who were for hours in many places at a standstill.

Stove and Greenhouse Plants.—In the class for twelve of these there was a good competition. Mr. Thornber, gardener to T. M. Shuttleworth, Esq., Howick House, Preston, was awarded the first prize of £20 and a gold medal for a very fine collection, consisting of six flowering and six fine-foliaged plants, among which the best were a large and splendidly-bloomed Allamanda nobilis, a very dark blue-flowered variety of Statice imbricata, much superior to the plant usually grown under this name; it was a specimen well worth growing not only for exhibition but for general decorative purposes. The same exhibitor had also a good example of Anthurium Scherzerianum, with large, deeply-coloured flowers. Foremost among the fine-foliaged plants was the finest specimen of Cordyline indivisa perhaps ever seen; it was 8 ft. high and 9 ft. across, and covered with broad, healthy foliage, the points of which hung down to the ground; in the centre of the group was a magnificent plant of the elegant drooping Fern Cibotium Schiedei, 18 ft. across, fresh green, and devoid of the yellow tinge which it generally has. Mr. Todd, Longside, Glasgow, was a good second; he had a well-bloomed specimen of Lapageria rosea, some 4½ ft. high and as much in diameter; the handsome autumn-flowering Erica Austiniana, one of the best of late-flowering Heaths; in addition to these he also had a grand Davallia Mooreana, 9 ft. across; this is one of the finest Ferns in cultivation. Another remarkable plant in his group was Gleichenia Mendelli, one of the best and rarest of these grand Ferns. Mr. McMillan, Corbet Castle, who was third, showed, amongst other plants, a beautiful example of the graceful Cocos plumosa, and another handsome Palm called Astrocaryum mexicanum. For nine stove and greenhouse plants in 10-in. pots positions were reversed, Mr. Todd being awarded the first prize (£10 and a gold medal), and Mr. Thornber the second. In Mr. Todd's group there was a beautiful plant of the rare and handsome Palm, Thrinax Stewarti; Mr. Thornber's collection contained the very scarce tree Fern Alsophila elegantissima. For fine-foliaged plants Mr. Todd was first with a very good collection in which were two beautifully-grown Gleichenias; Mr. J. Wilson, Beechwood, was second. For six stove and greenhouse plants Mr. Wilson was first with a group, in which were Dicksonia antarctica, the variegated New Zealand Flax (Phormium tenax variegatum), and a large specimen of Lilium auratum 10 ft. high and splendidly bloomed. Mr. D. Middleton, gardener to T. A. Smeaton, Esq., Broughty Ferry, was second; in the centre of his collection was a beautifully-grown Screw Pine. For three Crotons Mr. Thornber was first; he showed large and finely-coloured plants of C. majesticum and C. undulatum 5 ft. through. In the nurserymen's class for twenty stove and greenhouse plants, Messrs. J. & R. Thynne, Glasgow, were first with some very fine Palms and Dracænas; Messrs. Stewart & Sons, Broughty Ferry, were second with a well-grown group of smaller plants; Messrs. J. Cocker & Sons, Aberdeen, were third; their collection contained an immense plant of Cycas revoluta in a flowering state. For ten exotic Ferns (nurserymen), Messrs. Thynne was first with a really fine group, consisting of not over-large, but clean and fresh plants; amongst them were Gleichenia Speluncæ, G. flabellata, G. rupestris, G. dicarpa, and a very fine plant of Adiantum gracillimum. Messrs. Stewart & Sons, who were second, also showed a very good collection. Messrs. Laird & Sinclair were third.

New Plants not yet in Commerce.—In this class Mr. Bull, of Chelsea, was awarded the first prize with such a collection as even he has rarely shown: amongst them was a splendidly coloured and most singularly formed Croton, C. princeps, a veritable prince in this family of fine-leaved plants, which appears to combine all the colours of crimson, red, yellow, and green, usually met with in all the species with much diversity of form in the leaves. The same collection also contained C. gloriosum, another fine species; the distinct and handsome Fern, Sadleria cyatheoides; Zamia princeps, a fine species; and Lomaria Dobroydensis, a handsome and distinct kind. Mr. B. S. Williams was second with a good group, in which the most noticeable plants were Croton Williamsi, a kind quite distinct from the whole of this now numerous family; the leaves are large, broad, and blunt, deep green blotched and edged with white. The collection also contained Croton Queen Victoria, a grand species, worthy of the name which it bears; its leaves are about the same length and double the breadth of those of C. Wiesmanni, with four-fifths of the entire surface covered with deep yellow, shading off to red when fully matured; Messrs. Thynne were third. Messrs. Veitch exhibited about 300 new and rare plants, which almost eclipsed all they have previously shown in this way; they occupied some 150 ft. in length of a stage of considerable breadth. A few of the most remarkable were Cattleya Mangleai, a handsome hybrid, a very distinct and beautiful autumn-flowering kind, shaded with violet, white, and yellow; Anthurium cordifolium, leaves 2 ft. 9 in. long and 20 in. broad; a singular and distinct plant from Coomassie, an unknown species with ovate-opposite leaves, 2 ft. long; Cypripedium euryandrum, a hybrid between C. barbatum and C. Stonei; Davallia Youngi, a handsome, strong-growing Fern with creeping rhizomes; Anthurium Veitchi, one of the very finest of fine-leaved plants, totally distinct from all the other species; the young leaves are a yellowish, olive-green, over 2 ft. long by 8 in. broad, regularly and deeply corrugated across from the ivory-white mid-rib; Brahea filamentosa, a grand fan Palm from Colorado, covered with long, white, hair-like filaments, and one of the most distinct and handsome species ever introduced, possessing the great merit of being a greenhouse variety. The same collection also contained Osmunda palustris, another desirable plant, and a number of finely-grown Nepenthes, splendidly furnished with pitchers. Messrs. Veitch also exhibited a quantity of fruit trees in pots bearing a fine crop. Mr. B. S. Williams had a large and excellent group of new and rare plants, consisting of Orchids, Palms, Ferns, flowering and fine-foliaged plants, conspicuous amongst which were some very good Nepenthes.

Cut Flowers.—Of these there was a grand display, especially Gladioli. The competition between the veteran growers, Messrs. Kelway & Son, of Langport, and Messrs. Robertson and Galloway, was extremely close, the latter firm being first with a magnificent collection, the spikes of which were very large, the individual flowers being magnificent. Messrs. Kelway's stand was also a grand one, but some of the flowers showed the effects of the long journey to which they had been subjected. Two new kinds received first-class certificates, viz.:—Lord Beaconsfield, cherry-red veined with crimson, and having a white eye; and Earl of Strathmore, crimson veined with maroon, and having a purple throat. Dahlias and Hollyhocks were well represented.

Fruit.—In the class of twenty dishes Mr. Johnston, gardener to the Earl of Strathmore, Glamis Castle, who was first, had a splendid collection, in which was Black Hamburgh, Buckland Sweetwater, Lady Downe's, Muscat of Alexandria, and Madresfield Court Grapes, all in faultless condition, good in bunch, large in berry, and finely coloured; his Peaches, consisting of Grosse Mignonne, Stirling Castle, and Red Magdalen, were all handsome fruit, as were likewise his Nectarines, which consisted of Pitmaston Orange, Elruge, and Duc de Telliers. Mr. Goodacre, Elvaston Castle, Derby, was a good second with Foster's Seedling, Black Hamburgh, Muscat of Alexandria, Madresfield Court, and Canon Hall Muscat Grapes, all excellent examples of good cultivation, especially the Canon Hall, which was unusually well grown; this collection also contained a couple of good Smooth Cayenne and one Queen Pine, likewise a fine dish of Princess of Wales Peaches. Mr. D. Matheson, Meikleour, Perth, was third. In the class of fifteen dishes Mr. Upjohn, gardener to the Earl of Ellesmere, Worsley, was first with very fine Gros Colman and Waltham Cross Grapes, a pair of handsome Smooth Cayenne Pines, Bellegarde and Violette Native Peaches, and Brugnon Nectarines, splendidly coloured. Mr. J. McDonald, gardener to J. Patterson, Esq., Kinnettles, was second with a good even collection, in which Black Alicante Grapes were unusually fine. In the class of ten dishes (Pines excluded), Mr. D. Dickson, Mount Melville, St. Andrew's, who was first, showed very good examples of Golden Champion, Duke of Buccleuch, Black Hamburgh, and Lady Downe's Grapes, and a grand dish of Barrington Peaches. Mr. J. M'Connochie, Cameron House, was second; and Mr. D. Ross, St. Martin's Abbey, Perth, third, both exhibiting meritorious collections. In the class of eight varieties of Grapes, Mr. Johnston was first with beautifully finished moderate-sized bunches of Black Alicante, Burchardt's Prince, Muscat of Alexandria, Madresfield Court, Chasselas Napoleon, Lady Downe's, Royal Vineyard, and Black Hamburgh; Mr. Hunter, Lambton Castle, who was second, showed much heavier bunches, but smaller berries, some of them not so well finished as those from Mr. Johnston's. In the class of four varieties of Grapes, the competition was exceedingly close betwixt Mr. Stewart, of Peebleshire, and Mr. Bruce, gardener to J. Fildes, Esq., Manchester; Mr. Stewart was, however, placed first with Muscat of Alexandria, Black Hamburgh, Mrs. Pince, and Trebbiano; Mr. Bruce was second with Duke of Buccleuch, Gros Guillaume, Madresfield Court, and Muscat of Alexandria.

The Gum Tree.—In his report on Kew Gardens, Dr. Hooker says, "The Eucalyptus globulus, which has been so largely distributed on account of its supposed prophylactic virtues, will probably turn out to be extremely useful for its timber in countries not too hot for its growth. The plant seems to be proof against parasitic plants; the bark, being deciduous, causes the seeds of any parasite to be dislodged before they have time to germinate and so obtain a footing in the tissues of the plant." It is a pity it is not hardy enough to assume its full stature with us. Probably hardier species may yet be introduced.—V.

No. 253.] SATURDAY, SEPTEMBER 23, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ORCHIDS AT REST.

ON the care bestowed on the management of Orchids while at rest mainly depends the future health of the plants, and the production of the beautiful flowers for which they are cultivated. An acquaintance with the climate of the countries in which they are found enables us to know that most of them make their growth during the rainy season, and to imitate this by a more or less copious supply of water, together with a proper temperature during the growing season, is almost all that is necessary to ensure the healthy development of the plants; but after they are fully grown they require a proportionate season of rest, and we cannot, under cultivation, subject them to the same treatment which numbers of them receive in their native habitats. Many Orchids, particularly East Indian Dendrobes and other deciduous epiphytal varieties, experience in their native countries a high temperature during the resting season—often over 100°, while at the same they are exposed to the full rays of the sun; and this taking place during the dry season, and lasting for a considerable time, the plants are so reduced and emaciated, as to be scarcely recognizable. The knowledge of this fact was a dangerous thing in the early days of Orchid growing, for it was in trying to imitate Nature in this particular that cultivators mainly erred; they took great pains to preserve a high temperature, which only resulted in killing the plants. The resting season of by far the greater number of the Orchid family takes place under cultivation during our autumn and winter, and if we subject them to a high temperature during that period, when the sun has but little power, and when, on account of bad or frosty weather, the outer air, which alone could save the plants, cannot be admitted, in lieu of resting they push out weak and premature growth and soon perish. The sun-heat and pure air of their native wilds are very different from the artificial heat and close atmosphere of an Orchid-house. Happily cultivators have for years discontinued such erroneous treatment, experience having taught them that the one thing needful for the proper development of both plants and flowers—a resting season of sufficient duration—is better attained by subjecting the plants to a reasonably low temperature, at the same time keeping them as dry as possible consistent with their preservation in a healthy condition. When speaking of Orchids generally, they being widely distributed and coming from different elevations, no fixed time can be given as to the proper resting season for all kinds, as some few will always be found to be growing, and whenever this occurs the cultivator must use his own judgment, and treat them as growing plants until they are fully developed. Cattleya superba, C. Walkeriana, Chysis, and several other kinds, frequently make two growths in the year, and they should be rested after each growth, but the resting period during the autumn or winter should be the longer of the two. The majority of Orchids under cultivation take their rest between October and March, and even the late-growing kinds should, by liberal treatment, be so managed as to come in as early in the season as possible, so that they may have the full benefit of fine weather and bright sunshine during their early growth. Again, many of the New Granada Orchids and others from high elevations are known to experience at times in their native habitats a very low temperature—sometimes a touch of frost; but for similar reasons to those which forbid us giving a high temperature during the resting season to the East Indian varieties, &c., it is not judicious to allow these to get below a certain point, the probability being that if we subject them to an extremely low temperature, not being in exactly the same condition as if in their native habitats, they will suffer more or less. It will be well, therefore, to give the minimum day and night temperature for each class of Orchids during the height of the resting season, and afterwards endeavour to point out those varieties which require a long or a short period of rest, and those which require to be kept dry or otherwise during that period. The temperature for East Indian Orchids and those which are grown with them should be 65° by day and 60° at night; for those of the Cattleya or intermediate house 55° by day and 50° at night; and for the Odontoglossum or cold house 50° by day and 45° at night, the day temperature being allowed to rise 5° by sun-heat, admitting air on every occasion when the weather outside will permit. As Orchids rest at various times, some of them beginning in September, and others following on up to March, it will be readily understood that it would not be well to reduce the temperature of the respective houses to those mentioned for any such length of time, and on account of the number of growing plants contained in them it would be impossible to do so, except during the coldest months of the year, when the majority of the plants are at rest; but nothing need prevent the removal of the earlier resting plants into the suitable temperature until their own houses are ready for regulating to the approved temperatures during the resting period, when they can be returned to them. Aerides, Saccolabiums, Vandas, Phalænopsis, and other evergreen epiphytal kinds belonging to the East Indian house, do not require so long a season of rest as the varieties which lose their leaves, but the longer they are kept in an inactive state the better for them, and the surer are they to flower. These varieties should not be allowed to get quite dry, although great care should be taken not to water them unnecessarily or to damp the foliage, particularly in the heart of the plant. Evergreen terrestrial Orchids, such as Calanthe, Phaius, Cypripedium, &c., require the shortest period of rest of any class of Orchids, being frequently grown without any rest, but although they may succeed for a time when so treated, they suffer in the end. They should be rested immediately after flowering for three weeks or a month in the temperature recommended for East Indian Orchids, being at the same time but sparingly watered; this treatment will be found conducive to the health of the plants themselves, and it insures their flowering during the following season. Dendrobiums of all kinds require a long resting season, during which they should be exposed to as much sunlight and air as possible; the varieties which lose their foliage as the pseudo-bulbs ripen should not be watered, unless they evince signs of shrivelling, in which case a small quantity may be given them from time to time to keep them in a healthy condition. The drier these and other Orchids of like habit are kept during the resting season the more profusely will they flower, and the more likely are they to make vigorous growth; invariably when these plants are kept moist when they should be at rest they push out growth instead of flower from the joints, and thus lose all chance of flowering for that season. The decaying foliage should never be cut off, but allowed to fall off naturally. The evergreen kinds, such as D. thyrsiflorum, D. chrysotoxum, D. speciosum, &c., should be slightly watered, say once a week, but should never be saturated. Almost the whole of the occupants of the Cattleya or intermediate-house, Cattleyas, Lælias, Oncidiums, Guatemalan and Mexican Odontoglossums, Miltonias, &c., require a long period of rest, and if the temperature be kept as recommended, but little water will be needed; nevertheless the watering must be attended to during the resting just the same as at any other time, even if not more than a dozen plants require it. More care with respect to this matter is necessary with the intermediate-house plants than with the others; not a plant should be watered until it is seen that it cannot possibly thrive any longer without it. During the resting season the floor of this house should not be washed, and care should be taken not to spill water unnecessarily, a cool dry atmosphere being highly important to these plants when at rest. The Huntleyas, with which we may include Pescatorea, Bollea, Warscewiczella, &c., often tempt the cultivator to give them water when at rest, for having no fleshy pseudo-bulbs they are supposed by many to require support even when not growing; this is a great mistake, for no class of Orchids suffers more from being kept moist when at rest than these; they have large fleshy roots, and the most limited supply of water is sufficient for them in winter. The Chysis, Catasetum, Cycnoches, and allied plants should be kept dry while at rest. The Anguloas, Lycastes, &c., many of which are sub-terrestrial, should receive a little water occa-

sionally. Arpophyllums and evergreen Epidendrums should be treated the same as the Cattleyas. The Rodriguezias, Burlingtonias, Ionopsis, Oncidiums of the O. pulchellum and O. triquetrum class, and other small-growing kinds having no pseudo-bulbs, should be carefully watched, and water given them from time to time to keep them from perishing. Any of the Cattleya-house plants which may be growing during the resting season should be removed to the East Indian house until their growth is finished. In the Odontoglossum or cool house, which contains the New Granada Odontoglossums of the Alexandræ, nævium, and triumphans class, the Masdevallias, &c., coming from high elevations where the atmosphere is humid, and where the sun is not so powerful as in the lowlands and on the east coast, the necessary check is given to the plants by lowering the temperature to that given above, but not withholding water. Although the plants in this house should be more sparingly watered during the autumn and winter than during the spring and summer, they should not be permitted to get dry; they like moisture around them, and air, which is all important to these plants, should be freely admitted whenever the weather will permit. Care should be taken to preserve the minimum temperature for this class of Orchids, viz., 45° at night and 50° by day, and the thermometer should not be allowed to fall below that, for although I have seen these plants in a temperature almost down to freezing point without much apparent injury, I consider that a temperature of 45° is the lowest in which any Orchid can remain with safety. The Masdevallias grow at almost all times, and whether growing or resting will thrive well in the Odontoglossum-house; they should never be allowed to get quite dry; as soon as one growth is finished they commence another, and so on throughout the greater part of the year. The critical time with these plants is just as they have finished one growth and before they begin another; at this juncture, no matter how many times during the year it may happen, the Masdevallias should be watered but sparingly until the new growth starts. When a growth is completed the sheaths which encase the base, and which have been so serviceable up to that time, die off, and if the plants be watered freely at that time the moisture is apt to lodge in the sheaths, and instead of drying off in a natural manner they are likely to rot off, and either damage or destroy the growths which they are designed to preserve; keeping the Masdevallias drier after a growth is finished also materially assists them in the production of their flowers. The whole secret of managing Orchids during the resting season, particularly the deciduous, epiphytal kinds, lies in keeping the plants of each class in a reasonably low temperature, which will neither excite them into growth nor, on the other hand, shrivel and reduce them. The temperatures given above will be found to answer well, as the plants placed in them will require but little water, a matter of some importance, for it is better to err in keeping resting Orchids too dry than too wet. The ventilation of the Orchid-houses requires some degree of management during the dull months of the year, but as air is as essential to the plants then as at any other time, it must be attended to; even when there is only an hour or two of fine weather in the day the opportunity of giving air should not be neglected; it is surprising what improvement can be effected in the atmosphere of a house by opening two or three of the ventilators a quarter of an inch. The resting period offers a good opportunity for getting rid of any insects with which the plants may be infested, and to that end they should be carefully sponged over two or three times during the season, but care should be taken that they be not bruised or scratched; any of the plants which are shrivelled should not be cleaned until they have regained their plumpness, or the tissues will be injured and the plants disfigured. There are numbers of Orchid growers who possess but one Orchid-house, but although special care must be taken in the management of it, no obstacle is thereby offered to the successful culture of these plants. In such a case the house should be kept at the intermediate-house temperature, and each class of plants arranged together, and treated as nearly as possible as recommended, the object being to give the plants as good a rest as possible and to pass safely over the dull season, and this by the exercise of a little patience and discrimination can be readily accomplished. J. O'B.

THE FRUIT GARDEN.

ROOT-PRUNING FRUIT TREES.

Large, comparatively, unpruned, orchard trees, with their roots little or not at all interfered with, no doubt produce the greatest weight of fruit; but such trees in a kitchen garden, if at all numerous, soon make it impossible to grow vegetables near them in anything like a satisfactory manner; and in small or even medium-sized gardens, large fruit trees are completely out of place, for, in addition to the injurious effects inflicted upon other things, they prevent the possibility of growing a sufficient number of kinds to give variety. An attempt is often made to cope with over-luxuriance by severe branch-pruning, but so long as there exists an over-balance of root power, this only increases the evil by causing the production of still stronger, unfruitful shoots. Apart from the advantage gained by root-pruning in keeping the trees within bounds, it favours the production of flowers possessing more strength, and capable of bearing a lower degree of cold than those borne by trees in a less fruitful condition. This is no new discovery, but a fact known to those who have closely observed the effects of cold, ungenial weather at the time at which the trees were in bloom, and have noted the great difference in the ability to resist cold of trees of the same varieties standing side by side, but under such difference of condition in respect to their flowers as above indicated. The least observant could scarcely fail to notice the great difference there exists in the size, substance, and full development in all the parts of the flowers of fruit trees, especially Apples and Pears, that are in thoroughly fruitful condition such as that brought about by root-pruning, as compared with the small, imperfectly developed bloom of trees, that are more disposed to the production of wood than of fruit. Attentive observation over a lengthened period, in various parts of the country, and on soils as different in their nature as they possibly could be, but all by their results pointing in the same direction, has enabled me to speak with confidence regarding this matter. I never recollect a season when the effects of these conditions in fruit trees were more fully exemplified than during the cold and lengthened spring which we had this year. To secure the desired results, the principal thing to be observed is to prune at the right time. If the work be carried out very early in September its effects will be to some extent apparent the following season, as it will induce the formation of fruit-buds that otherwise would not exist; but it is during the ensuing summer that the influence which it has upon the trees will be most apparent, as their energies will be directed towards the formation of immense quantities of fruit-buds, instead of, as hitherto, the production of useless wood, and this in the case of trees that previously have shown little or no disposition to bear. Root-pruning can easily be performed by any one possessing a fair amount of intelligence; but for the guidance of those who may not have seen work of the kind done, it may be necessary to give some explanation as to the mode of procedure. Commence by cutting a trench about 15 in. wide on opposite sides of the trees—say on the north and south sides going about halfway round at a distance of from 3 ft. to 4 ft. from the stem, according to the size of tree to be operated upon. The younger and smaller it is, the closer its roots may be cut in without danger of its being afterwards displaced by the wind. Cut the trench as deeply as any roots can be found, severing all the strong ones completely, especially those that are deep down, making a clean cut of each with a knife even with the side of the trench next the tree; when sufficiently deep to have got at all the roots that occupy a horizontal position, in the case of any trees that show more than usual vigour it will be advisable to work right under the centre of the ball of earth at a depth of 2½ ft. or 3 ft. below the surface, according to the natural depth of the soil and size of the tree, so as to get at any tap roots that descend perpendicularly into the sub-soil, and which, if they exist, are most likely the principal cause of rank growth and unfruitfulness, severing these, as recommended in the case of the strong side roots; in replacing the earth, particularly where the work has been carried right under the trees, it will be necessary to ram the soil well into its place so as to make it something like

as solid as it was before being removed, making it similarly solid at the sides. If in two or three years' time the trees again show a disposition to get too strong, open trenches on the opposite sides, and treat them as just recommended.

Where fruit trees are grown in kitchen gardens, such as the above are supposed to be, and the soil is rich and deep, with a good deal of manure used for the vegetable crops, it is sometimes necessary to repeat this root-pruning operation at intervals of from three to four years, on each occasion cutting the roots 8 in. or 10 in. further away from the bole of the tree than at the preceding pruning; but in most cases when the trees, after their first or second pruning, are brought into a free-bearing condition, they keep on in a fruitful state, as fruit-bearing in itself, by taxing the powers of the trees, acts directly as a corrective of over-luxuriance. I sometimes meet with people who assert that root-pruning has injured their trees, but in all cases where this has occurred I have been able to trace the ill effects to its being either practised where not required, or much more frequently to the work being done at the wrong time. On several occasions, by way of experiment, I have tried the effect of root-pruning carried out in the spring at different times up to when the buds were slightly in motion, and in all cases it injured the trees; in some its effects were visible for years, reducing them to a weakly condition, in which they made little growth, generally producing plenty of fruit but very small and out of character. I have also carried out the work in every month, from the time the leaves were off until the spring. November, December, and January, showed little difference in the effects produced, but in no case did the operation appear to have such an influence in causing the production of fruit-buds as when performed in September, whilst the trees were full of healthy leaves. Complete removal and replanting, if the trees have stood undisturbed at the roots for any considerable time, is a more trying ordeal than root-pruning, but similar in its effects, so far as inducing the formation of fruit-buds; and this is another matter which at this time of the year deserves especial attention. I much prefer the latter half of September for carrying out this work in the case of moderate-sized trees, such as may have been planted a dozen years or so, to deferring the removal until later in the season. Some years ago I moved a number of Apples, Pears, and Plums that had been planted fourteen years, and once root-pruned during that time, viz., three years before they were taken up. They were removed in September, with all the roots that could be got attached to them, and with as little mutilation as possible, carefully planted, well watered, and securely staked; and nothing could have succeeded better; most of them bore a thin crop the ensuing summer, but, as might be expected, the fruit was small. They have ever since borne remarkably well. A friend of mine some years ago had occasion to move some hundreds of Apple and Pear trees that had stood for over twenty years without shifting from the place where first planted; they were transferred to their new quarters in September, and, with very few exceptions, they succeeded, and are now as healthy and fruitful as could be desired. Now, if these trees had not been moved until the season was so far advanced that the leaves had fallen, they would have been several years before they recovered, making very little growth, and producing small fruit of little value. The difference between early autumn and winter planting is, that when the trees are moved whilst the earth and air contain sufficient heat to induce them to make new feeding roots at once, and the leaves upon them have vitality enough to assist the formation of such roots, these are in readiness in spring to answer the call that is made upon them to support the leaf development that the trees then attempt; whereas when removal takes place after the leaves have fallen and the ground has got cold, no roots are formed to assist bud and leaf-expansion. The result is, that the latter are of the smallest and poorest description, generally becoming a prey to red spider, and that the trees can only be kept alive through the summer by continuous watering, and in the autumn are weak in the extreme.

T. Baines.

The Italian Government has prohibited the importation of Grapes, as well as the leaves and all other parts of Vines into that country.

PEACHES AND NECTARINES ON MAGNESIAN LIMESTONE.

That fine late Nectarine the Victoria grows so well here in soil taken from the surface of a magnesian limestone rock, that I generally stack some of the most turfy portion of this soil every year for adding to the Peach tree borders, and for orchard-house trees as well as for the borders. No manure of any kind is added to this soil, as I find the young shoots of the trees always ripen both wood and buds better without stimulating them into grossness, and the fruit can be grown to the largest size by giving some liquid manure to the trees at the proper season. One of the greatest errors in Peach culture that can be committed is planting the trees in too rich a soil, the materials frequently employed being manures containing the spores of funguses, which soon find their way to the roots, and unhealthy, barren trees are the result. A magnesian turfy soil is only found in a few localities, but good substitutes may always be found in loamy or dark, sandy soils, to which should be added any calcareous materials, such as old mortar or scrapings of roads in chalky districts, that can be obtained. When properly made and drained I find in Peach borders that the trees do best where they are not disturbed by digging or forking amongst the roots, in fact, the soil cannot be kept too solid. As "V." (see p. 235) mentions that the Walburton Admirable Peach does well here, I may state that this variety is grown in the same soil as the Victoria Nectarine. Although this very large and fine late Peach never colours very highly as a show fruit, it is nevertheless a valuable kind, on account of its lateness in ripening and fine flavour. Another late Peach, the Desse Tardive, is a very useful sort, but not so much grown or known as it deserves to be. Mr. Rivers' Princess of Wales and Lord and Lady Palmerston, are likewise invaluable for prolonging the Peach season until it is wound up by the Salwey.

Welbeck. W. Tillery.

Protecting Early Vine Borders.—After so much dry weather we may possibly have a good deal of wet; every care should, therefore, be taken to protect early Vine borders from getting saturated at this time of the year, as nothing is more inimical to the growth of early Vines than a cold wet border. As sun-heat is now diminishing, early borders should have a few inches of litter placed over them, and should then be covered with wooden shutters, to keep out rain and enclose the summer's heat which the borders now contain, till the end of October, when the shutters should be lifted off, and all the old litter carefully removed, for if any be left it is apt to encourage fungi. If the roots be close to the surface a dressing, consisting of 2 in. of good fresh turf and a handful of ½ in. bones, will keep up the vigour of the Vines, under the unnatural pressure to which they are subjected when forced early into growth. Then apply 3 in. of freshly rotted manure and 1 ft. of leaves or litter, and replace the shutters, which will keep out rain and maintain a certain amount of natural heat during the winter, which is more congenial to the roots than placing hot-beds on the borders. When the shutters used for this purpose are in a dry state, they should be coated over with gas-tar and pitch, boiling hot, every second year.—James Smith, *Waterdale.*

Large Strawberries.—Among forty varieties of Strawberries which I grew last year, the largest was James Veitch, eight fruits of which weighed 1 lb. This season it took from seventeen to eighteen to weigh 1 lb., a result partly owing to the cold, frosty weather which we had in May and June; so severe, indeed, was the frost in June, that all the earliest bloom was destroyed. The large fruits gathered in 1875 were Cockscomb-shaped, not those of a globular or conical form, which is the normal shape of this variety. I noticed also in these large Strawberries a great tendency to decay, if in contact with the damp soil. I have gathered during the past season very fine and large fruit from Dr. Hogg, President, and Sir Joseph Paxton, all first season plants. Many of the finest fruit of these kinds weighed nearly 1 oz. each. I consider these three varieties superior in many respects to James Veitch, especially as regards quantity and quality of fruit.—W. Lovel, *Weaverthorpe, York.*

The Colston Basset Melon.—Having acted as fruit judge at several exhibitions this season, I have had to test the quality of a great quantity of Melons, and I have remarked that wherever Colston Basset was exhibited it has generally stood first in point of flavour. If others would give us their experience in this and similar matters, we might soon arrive at something satisfactory as regards the best kinds of fruits.—Wm. Culverwell, *Thorpe Perrow, Bedale.*

Economical Grape Growing.—At Warren Wood, near Hatfield, Mr. Haslett has placed a glass covering over some Vines in the following manner:—First he has a few courses of bricks, then a hand-glass firmly set, and on this a second hand-glass with a movable top; each contrivance, of which there are several, contained one Vine well laden with fruit, these were planted previously to their breaking into bud.—E. Bennett, *Rabley.*

NOTES OF THE WEEK.

Fuchsias in Sea-side Gardens.—It is probable there is no more lovely effect from vegetation than that now afforded by the bushes and hedges of the commonest and oldest Fuchsias in cottage gardens in South Wales and various other wild and sea-shore districts. A dense hedge of one of these immediately within and drooping over the low wall of a Welsh cottage garden was brilliant and lovely indeed, at a time (September 20) when our own wild plants and most of the garden flora, too, are past or on the wane. Why not try a number of the newer and finer kinds in districts where the Fuchsia is so much at home in the open air?

Œnothera cæspitosa.—This is one of the most beautiful of Evening Primroses, a native of California, and probably a biennial. It forms dense rosettes, consisting of leaves from 5 in. to 7 in. long, the edges and veins of which are thickly set with silvery hairs. The flowers, which are pure white, measure 3½ in. across when open, and are very fragrant. Plants raised from seed in spring, and planted out in the beginning of June, will commence blooming early in July, and keep on flowering till September. This Œnothera, indeed, is in every way a most desirable plant, both its flowers and leaves being pretty. It does not exceed 6 in. or 7 in. in height, and its blossoms keep open during the day.

The Soapwort as an Autumnal Garden Flower.—A correspondent writes to us concerning Saponaria officinalis:—"This well-known plant might be used with advantage more frequently as a garden flower, especially where hardy, late-blooming kinds are sought. The flowers seem to have nothing of the aspect of autumn about them, and are freely produced. Such fringes of the Soapwort as I have lately seen along hedge-banks in Wales would be very welcome in the wild garden."

The International Potato Show.—This Show, a repetition of the experiment of last year, will be held in the Alexandra Palace, Muswell Hill, on Thursday and Friday next, September 28 and 29. The past season having proved in many districts unfavourable to the Potato crop, it will be a matter of some interest to note the varieties that acquire prominence in the forthcoming Show. The prizes offered amount to over £140, and it is expected that fully 3000 dishes will be staged.

Pittosporum Tobira in South Wales.—There is now opening its flowers against Singleton Abbey a tree of this nearly 20 ft. high, full of flowers and buds. This most precious shrub is not sufficiently planted on our warmer coasts: it is, so far as the blossoms are concerned, as good as the Orange tree; the flowers are freely produced all the autumn, and indeed in winter. It is a fine evergreen, distinct in foliage and habit from any other we have. In short, we know of no one hardy shrub offering so many charms for gardens by the sea.

Impatiens glanduligera.—This old annual flower is a charming ornament at this season, when its delicate lilac blossoms, remarkably like Orchid flowers, are so freely produced on stout plants 4 ft. high. It is abundant in many cottage gardens in Wales, where it probably sows itself. In various positions in the wild garden it would be charming, affording as it does, when seen in quantity, a distinct and beautiful aspect of vegetation late in the season.

Vineyards in England and Wales.—A correspondent writes to us expressing his opinion that a Vineyard would have a much better chance south of London than even in the warm and excellent site selected by the Marquis of Bute. He considers that the warmer soils on the chalk hills of Kent or Sussex would be much more conducive to the well-being of a Vineyard than the richer and moister soils of the west coast, where, moreover, the climate is moister.

The African Lily for Indoor Decoration.—It may not be generally known that Agapanthus umbellatus, an old border and greenhouse favourite, is admirable for room decoration; a single large truss of it in a low narrow-necked vase, or plain glass Hyacinth bottle, has a strikingly pretty effect. This plant should be grown more frequently than it is in the milder districts of the country, where it survives the winter in the open air.

The Potato Disease.—Mr. Garland, writing from Killerton, near Exeter, informs us that this disease has attacked the Potato haulm in that neighbourhood, and that it is spreading rapidly. Many of the tubers lifted a fortnight ago have also become affected. We may add that diseased Potatoes are beginning to make their appearance in Covent Garden Market.

New Cure for the Phylloxera.—Among recent communications to the French Academy on the subject of the Phylloxera was one by M. Thenard, describing the good results obtained by stripping off the bark of phylloxerized Vines. This is easily done by means of a steel glove, and it frees the Vine from the insect during its aërial evolution. The method might prove more advantageous than that which attacks it during its subterranean life.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

In warm, sunny positions hardy Cyclamens are now very pretty, and well deserve a place in every garden. Among the most showy Composites now in bloom are Chrysanthemums of the dwarf early flowering section; several of the Sunflowers are also still very attractive, and none more so than the double form of Helianthus multiflorus, which may be seen in good condition at the Crystal Palace and elsewhere grouped with Dahlias and Tritoma Uvaria. Among Dahlias one of the most distinct and beautiful is D. coccinea, a free-growing, single-flowered variety with bright scarlet ray-florets and a yellow disc; rosy-crimson and white-flowered Pyrethrums are still very effective and well deserve culture, if only for the bright-tinted flowers which they afford for large vases. The Michaelmas Daisies are now in perfection, and among the most effective are Aster Novi Belgii and A. cassarabicus, a large-flowered variety of a lovely blue colour. A very pretty Iberis named ciliata is now bearing tufts of delicate lilac-purple flowers in abundance; Chelone speciosa obliqua is at present one of the noblest of all autumn border flowers; Dracocephalum speciosum is also very pretty, bearing erect spikes of bright rosy blossoms; and a semi-double white variety of Centranthus ruber deserves notice on account of its late-blooming properties, as also does the bright crimson-flowered Spigelia marylandica, which still continues to flower, although its first blooms opened fully two months ago. The Ceylon Wind-flower (Zephyranthes candida) is now very pretty, its pearly buds and white petals peeping through the soil in company with the lilac and purple-flowered Colchicums, which are still beautiful in sheltered positions, the best being C. speciosum, which has large, waxy, purple-tipped flowers 4 in. across. The scarlet Gladiolus-like Schizostylis coccinea is now opening its glowing flowers on sunny borders, as is also Lobelia syphilitica and L. fulgens; Alstrœmeria peruviana, with crimson, green-streaked flowers is likewise very beautiful. Some of the Evening Primroses continue in flower, as do also the different forms of the Marvel of Peru and the purple-blossomed Cuphea-like Lythrum alatum and Convolvulus cantabricus, a useful Bindweed with delicate rosy blossoms. One of the prettiest of all blue flowers now in full beauty is Anchusa capensis. The charming Gladiolus Saundersi is still in great beauty in the Wellington Road Nursery; it is one of the most distinct and beautiful of all the G. ramosus type, and well deserves a place among autumn flowering bulbs. Hieracium aurantiacum is flowering on dry, sunny banks, and at Mr. Ware's may be seen the pretty little purple-flowered Triteleia-like Tulbaghia violacea, one of the prettiest of all late-flowering Alliaceous plants. One of the best of all the yellow-flowered Hypoxis is the stellate golden-flowered H. villosa, which is blooming freely in a bed at Tottenham, but it is so beautiful and precious that it well deserves careful pot-culture in a frame. Viola canadensis, pale-flowered American plant, is now flowering freely; and one of the prettiest of all white flowers now in season is Lychnis vespertina fl.-pl. Epilobium sericeum is still very ornamental, as is also the rosy-lilac Sedum spectabile. Rudbeckia purpurea is one of the noblest of all Composites, its wine-red florets contrasting well with the dark brown cone-shaped disc. Perhaps one of the most striking of all hardy plants is Tigridia Pavonia, which is in fine condition; as is also a pretty little yellow-flowered Snapdragon, named Linaria genistifolia.

Out-door Camellias in Devonshire.—We had for many years a very fine old Double White Camellia growing in the open air. It was 10 ft. high and the same through; it grew freely, and set its buds very thickly from three to five at the point of each shoot. The situation was very favourable, being a corner of the flower-garden facing south-east, and sheltered on three sides by the walls of the house. It was protected every winter by a temporary framework covered with mats, but although it succeeded so well and flowered freely, the blooms were not comparable with those grown under glass; they had a yellowish tinge at the base of the petals, and generally fell prematurely. The plant stood on the same spot probably for upwards of forty years until five years ago, when I boxed up the ball with a strong Elm box, raised the plant up bodily with a lifting jack, and, by means of a horse and low truck, took it away, and planted it in the centre of the conservatory, where every spring since it has flowered profusely.—J. Garland, *Killerton.*

Orange Hieracium (H. aurantiacum).

Shrubby Stonecrop (Sedum populifolium).

Purple Cone-flower (Rudbeckia purpurea).

Saffron Crocus (C. sativus).

Aster amplexicaulis.

Water Plantain (Alisma Plantago).

Double Meadow Buttercup (Ranunculus acris fl.-pl.).

Lady Larpent's Plumbago (P. Larpentæ).

Purple Hemp Agrimony (Eupatorium purpureum).

Blue Sow Thistle (Mulgedium alpinum).

Pampas Grass (Gynerium argenteum).

Goldylocks (Linosyris vulgaris).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

BEGONIAS OUT-OF-DOORS AT HEATHERBANK.

The Begonias now in bloom in Mr. G. F. Wilson's garden at Heatherbank, Weybridge, have formed a very charming and various display of colour during the last two months, and will probably continue to do so for some time to come. Almost every shade of colour, from white, yellow, and pink, to every shade of red, orange, crimson, and scarlet, and even deep maroon, can now be found among the new species introduced of late years, or the hybrids and varieties which have been produced in our gardens. It is somewhat singular that considering their hardiness, neatness of growth, graceful and varying habit, and above all, their abundant flowering properties, that they have not ere now become as popular, even in cottage windows, as Fuchsias and Pelargoniums. Many of the kinds have the graceful drooping habit of growth and the pendent flowers in as great profusion as those of the most showy Fuchsias, while their brilliant and varied range of colour is certainly more striking than that of the Fuchsia family; and while the Begonias have at present the indubitable charm of comparative novelty, even our favourite Pelargoniums are scarcely more attractive as regards colour. A large bed of Begonias at Heatherbank, of various tones of crimson and scarlet, is so successful in effect that surely more general use ought to be made than at present of the exquisitely beautiful kinds that are now in such variety. They ought certainly to be taking a more conspicuous place as bedding plants, and a hint from the proper quarter might perhaps lead to the adoption of Begonias for bedding purposes in Hyde Park as a means of varying somewhat the too familiar character of the Pelargoniums and other flowering plants now to be seen there. In reference to modern Begonias, it may be as well to describe a few of the most conspicuous now in bloom in Mr. Wilson's collection for the benefit of your readers. By "modern" Begonias is meant those kinds which are of comparatively recent introduction, principally from Central America, and more notably from Bolivia, whence the beautiful species which literally covers itself with gracefully drooping blossoms of vivid orange-scarlet was introduced, and which bears the name of its native country as B. Boliviensis. It was from this splendid Begonia that Messrs. Veitch and other well-known cultivators raised some of the more dazzling varieties. The old favourite Begonia of the cottage window, where it still lingers as an old-fashioned relic, is a mere weed in comparison with the new species and varieties. Its modest two-petaled flowers of delicate rose-colour, with the accompaniment of its crimson-veined leaves and transparent scarlet stalks, fade into insignificance when compared with the superb four, six, and eight-petaled members of the family recently brought into cultivation. These are soon destined to form the glories of many a cottage garden and window throughout the land, and will afford to cottagers' wives and daughters the same interest in collecting the little bulbs as that to which they have been accustomed with their old favourite, but now eclipsed species, keeping them through the winter free from frost to re-plant them in February, and watching the rapid growth of the beautiful plants till they attain their full size and beauty in high summer. Some prefer leaving the bulbs in the pot undisturbed when the plant dies down, and keeping it perfectly dry until the ensuing season—about February. The following are a few of the most beautiful varieties which I noticed at Mr. Wilson's last week:—

Begonia Sedeni, a seedling variety from B. Boliviensis, is a most brilliant plant. The flowers form a profuse shower of dazzling crimson, drooping gracefully about it like a floral mantle. Mr. Wilson has raised several varieties from B. Sedeni which differ from, and in some respects surpass, the parent in beauty, the seed having been obtained from plants growing in the open border.

B. Wilhelm Liebnich is a very exquisite variety, with large four-petaled flowers of soft, light-toned, orange-scarlet.

B. Mazeppa is of somewhat similar character to the preceding, but its flowers are of a pale, though yet vivid salmon colour.

B. rubra superba has large, drooping, long-petaled flowers of bright scarlet.

B. Richesse is a beautiful variety raised in France, the flowers of which form five-petaled flat rosettes of deep velvety maroon, with a low, bushy, and robust habit, in contradistinction to the slender and graceful growth of many of the preceding.

B. corail-rose.—A seedling raised by M. Lemoine, has flowers of a rich maroon tone. It is also of low growth, springing from a tuft of rounded leaves of rich velvety green, and is similar in some respects to B. Veitchi.

A new white kind, raised by the late M. Van Houtte, is a handsome plant, with four-petaled flowers of vellum-like texture, opening flat, and very conspicuous.

B. Pfitzer is a very distinct plant; the flower-stalks shoot up from a tuft of Gloxinia-like foliage, smooth and tall, and terminate in a pair of large and graceful pinkish blooms.

B. Pearcei, which is one of the longest known of the recent kinds, is at the same time one of the most beautiful, the five-petaled flowers, opening flat, being of the most pure and vivid canary-yellow. The foliage of this plant is also very ornamental, being dark velvety green conspicuously veined with yellow. It is now flowering in a cold conservatory, the doors of which are constantly open, but it has so completely the aspect of a stove plant requiring tropical heat that I doubt its capacity for bearing the exposure of the open border; yet it is doubtless sufficiently hardy for the summer months.

B. octopetala, bearing an eight-petaled, white flower as large as that of a single Dahlia, is also a superb kind, introduced many years ago, but still rare.

B. Veitchi is too well known to require description; it is one of the finest of all the new varieties.

Considerable numbers of these interesting modern Begonias have been proved to be sufficiently hardy to stand the winter in our gardens, and yet, at present, but little advantage appears to have been taken of such an opportunity for the production of novel and beautiful effects, as they manifestly afford. Several of the most beautiful of the above-named species and varieties have now withstood several winters on Mr. Wilson's rootwork, on which also several kinds of autumnal Cyclamens are now in fine bloom, and other Begonias enrich the borders, or are seen in masses as bedding plants. The Begonias are this autumn making a greater show at Heatherbank than any other class of plants, always excepting the well-known collection of Lilies. H. N. H.

Autumn Roses.—At no season of the year are Roses more beautiful than in the autumn; in fact, the blooms of several varieties surpass in quality, if not in quantity, those of June and July, and notably those of such light kinds as Souvenir de Malmaison and Acidalie and of dark sorts, General Washington, the summer flowers of which are frequently imperfect. Many others amongst Hybrid Perpetuals, Teas, and Chinas also produce better blooms in autumn than in summer. The majority of our Roses are on their own roots, in beds or raised banks, on which the longest shoots of each year are pegged down, most of the old wood being cut out in winter. By this means we get an unlimited amount of bloom, and as it is principally wanted in a cut state for indoor decoration in London, we frequently supply, during the height of the season, several thousand blossoms every week. This is a large consumption, but there is one advantage in cutting the plants in early, and that is, they start into vigorous growth immediately they are relieved from their burden of flowers, and the lateral shoots of all the really perpetual flowerers yield a second crop in the autumn—in many instances, as I have said, superior to the first. Where Rose-buds are in request at this season, that beautiful variety Celine Forestier should be largely grown; with us it continues to produce its blossoms until the Tea Roses under glass are ready to furnish a supply.—J. Groom, *Henham.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Mountain Evening Primrose (Œnothera montana).—This was received by Mr. Ware, of Tottenham, from the Beaver-dam Mountains in Northern Utah. It is a true perennial, with leaves from 4 in. to 5 in. in length, lanceolate and entire, somewhat resembling in character those of Œ. macrocarpa. It throws up numerous stems about 4 in. in length from a single root-stock, and produces large yellow flowers, 3 in. to 4 in. in diameter, in abundance.—A. J. P.

Lobelia, St. Martin's Blue.—This Lobelia was raised a few years ago by Mr. Ross, of St. Martin's Gardens, Perth, at which place (according to "The Gardener") several thousands are this year planted out. It received a first-class certificate at the Perth July show. Its foliage, instead of being green, is a very dark bronze, and the flowers a very telling blue, like the best forms of Lobelia speciosa. The foliage being so dark, the effect produced in mass is very striking, from the absence of the grassy appearance which the green foliage imparts, especially in wet seasons. This is certainly a most effective flower garden plant.

THE ROYAL GARDENS, FROGMORE.

The accompanying illustration (p. 309) represents a view in the gardens at Frogmore House. In the foreground may be seen a splendid specimen of the Maiden-hair tree (Salisburia adiantifolia) with a double leader; this tree is fully 80 ft. in height, and perfectly symmetrical, its peculiar olive-green tint contrasting admirably with that of the other trees with which it is associated. Nearer the house is a deciduous Cypress (Taxodium distichum) which, as shown in our engraving, is feathered to the ground with foliage, with the beautiful tint of which every one is familiar. Of Beeches, Robinias, Planes, and Limes, there are also fine examples, and near a piece of ornamental water of a serpentine character, Weeping Birches and Willows are seen to excellent advantage. Here, too, are many noble Conifers, among which we remarked a splendid clean-stemmed, deciduous Cypress, fully 80 ft. in height, the bole being nearly if not quite 3 ft. in diameter. A Wellingtonia planted in 1858 is now 51 ft. in height, and there are some fine specimens of the deep glossy green Thuja gigantea from 20 ft. to 35 ft. in height, Thujopsis borealis, 20 ft., and good examples of Cupressus funebris, Lawson's Cypress, and the more choice varieties of Abies and Picea. These constitute striking features on the soft, mossy, gently undulating lawn, their fine forms being here and there reflected in the water as in a mirror. Some of the larger beds and borders are filled with Rhododendrons and Ghent Azaleas, which, together with Hawthorns and Laburnums, are beautiful when in flower in spring. A couple of evergreen Oaks having enormous boles and wide-spreading heads of deep green foliage are specimens of their kind such as one seldom sees. The common Barberry (Berberis vulgaris) is also very beautiful here, its tresses of bright coral-tinted fruit hanging down in profusion among the glossy foliage of the surrounding evergreens. Mountain Ash trees, too, are now to be seen at their best, being heavily laden with clusters of scarlet berries, and some of the finer varieties of Cratægus are also furnished with scarlet, crimson, and yellow fruit. An avenue of Wellingtonias, consisting of trees wholly raised from cuttings inserted in 1857, ranges from 30 ft. to 40 ft. in height. A little plot sheltered by Yew hedges is devoted to herbaceous and other hardy plants, such as Rudbeckias, Phloxes, Fuchsias of the globosa, magellanica, and gracilis types, Tree Peonies, and Irids. The wall space is covered with Jasmine, Virginian Creepers, Cotoneaster, Magnolia, and other flowering deciduous and evergreen shrubs, and near one of the summer-houses is an interesting old bower similar to that at Hampton Court and others to be found in old-fashioned gardens. What, however, struck us most was the calm repose which characterises the whole place—tree shade, bright green, velvety lawns, and varied water margins, but no geometrical flower-beds of complicated patterns, no carpet bedding or glittering parterre destroying the peaceful beauty of a scene held sacred as the resting-place of two of the nearest relatives of England's Queen.

The Home Park and "Slopes."

With the lofty position of Windsor Castle most of us are acquainted, and the distant views to be obtained from its terraces and slopes are too well known to need description. The Home Park is that part of the grounds which more immediately concerns us. It is very extensive, and consists of broad expanses of smoothly-shaven turf, enriched here and there with memorial trees. At some distance from the castle are noble specimens of Oak and other trees, one of the Oaks measuring 36 ft. in circumference. There are also some fine specimens of Paulownia imperialis, two of which measure some 45 ft. in diameter of spread of branches, and they flower beautifully every year. On the slopes—*i.e.*, on the embankment that surrounds the castle on the north and east—are gay flower-beds, which, owing to unremitting attention and abundance of water, almost rival in beauty those on the level ground. The sub-soil being chalk, trees and shrubs grow freely until they reach a certain age, when, from drought and other causes, they lose their superabundant vigour, and become more fertile, producing masses of bloom in spring and early summer, and abundance of berries in autumn. Oaks, Chestnuts, Beeches, Elms, and other trees of large size, flank the base of the bank, or hollow, as it is commonly termed, and are seen to advantage from the walk that stretches along the eastern boundary of the park immediately above the embankment. The slopes themselves are clothed with evergreen and deciduous ornamental shrubs, and along the summit are some fine young Conifers. On a hill-side, at some little distance off, is a chalk-pit, which, at the suggestion of the late Prince Consort, was converted into a natural-looking rocky precipice, ornamented with Ferns, Alpine plants, and creepers that spread over stones, and fill up fissures in the most charming way imaginable. Nor does it in any way reveal traces of artificial treatment. It is flanked on two sides with trees and shrubs, some of which also support it near the base, where some rocky boulders, now mossy and mantled with vegetation, find a resting-place; a walk led over a rustic bridge traverses the length of this precipice, past a cosy arbour, and down into the valley, by means of rude stepping-stones. One of the finest features in this rocky dell is a little streamlet that, issuing from the top, dashes over a craggy descent until it reaches the bottom, where it buries itself in a tranquil miniature lake filled with fish, and ornamented with Ferny banks. The chief plants employed in the decoration of this glade are many varieties of Saxifrages and Primulas, Arabis, hardy Heaths, Creeping Jennies, Helianthemums, Ferns of many sorts, Periwinkles, Roses, Virginian Creepers, Mahonias, Viburnums, Yuccas, Garrya elliptica, the Strawberry tree, and various kinds of Junipers. At the extreme end of the Home Park is another lovely little vale, in which is situated Adelaide Cottage with its flower garden, and also another charming little cottage, the residence of one of the park-keepers. Here there is a grand specimen of the Blenheim Orange Apple tree with a stem 7 ft. in girth, and bearing a crop of splendid fruit, averaged at about 26 bushels, and some years as many as 30 bushels have been gathered from it. There is also a fine specimen of the Kœlreuteria paniculata in this vale, and in the park close by is one of the most symmetrical examples of Wellingtonia gigantea in the country. It is quite straight, erect, thickly branched to the very base, and measures over 30 ft. in height. Trained on the front walls of the cottage just alluded to are some Vines, whose canes ramble over the roof, and never have we seen, either in or out of doors, such a crop of Grapes as they are producing this year; the bunches would probably average about ¾ lb. each. The varieties thus grown are the Royal Muscadine, Black Hamburgh, and the Syrian.

The Terrace Flower Garden.

This, properly so called, lies on the east side of the castle, and in outline is of a somewhat semi-circular form, surrounded by a raised broad terrace walk. On the garden side of this terrace is a steep bank of velvety turf, and on the other side a perpendicular stone wall. The beds are all geometrical in style, and are laid out on a soft and excellent carpet of turf. Spacious and well-kept gravel walks intersect and surround this garden, the centre of which contains a fountain and basin, whilst by means of handsome stone steps an easy communication is maintained between it and the surrounding terrace. The middle of some of the largest beds, most distant from the castle, is filled with tall hardy and sub-tropical plants edged with dwarfer subjects, and these do good service in the way of toning down and softening the brilliant effect produced by several carpet beds and others massed with Pelargoniums, Calceolarias, and ordinary bedding plants. Amongst the hardy plants thus employed, are the finer sorts of Yews, Hollies, and Cypresses, also the Arundo Donax, and a few other herbaceous plants. Amongst these are mixed Cannas, Castor-oil plants, and similar subjects, the ground between them being carpeted with Tropæolums and Petunias. The advantage of having these shrubs planted permanently in the flower-beds consists in their utility both in winter and spring, when, with the addition of some bulbous and other spring-blooming plants, they look almost as cheerful as they do in summer and autumn. The carpet bedding is exquisite and the patterns tasteful and well defined. The material with which they are filled consists chiefly of Golden Feverfew, Mangles's variegated and crimson variegated Ivy-leaved Pelargoniums, well pegged down, and also other dwarf and choice kinds of bicolor and tricolor Pelargoniums. The beautiful Fern-like leaved

variegated Polemonium cœruleum forms likewise an important constituent in the composition, as do likewise the various kinds of Alternantheras, compact-growing Lobelias, Coleuses, Iresines (particularly I. Lindeni), Centaurea ragusina, Echeverias, Sedums, and others. The Centaurea ragusina stands out in bold relief in the form of large individual specimens, somewhat over 2 ft. in diameter, and it is also used as an edging to some of the large beds. Yellow Calceolarias thrive and flower wonderfully well in this garden, as do also some of the more brilliant and free-flowering Pelargoniums, such as Stella, Cybister, Attraction, Madame Rudersdorff, Waltham Seedling, Lucius, &c. At the north end are some beds filled with hardy Heaths, such as Erica vagans, intermedia, carnea, and herbacea, and immediately in front of the castle is a magnificent vase, a counterpart of the celebrated Warwick vase, filled with little evergreens. The retaining wall supporting the terrace, adjoining the castle and facing the flower garden is draped with climbing and trailing plants, such as Clematises, Wistaria sinensis, Banksian Roses, Fuchsias, Magnolias, Pomegranates, &c., and along its base is a mixed border containing hardy herbaceous and other plants. At the end of this wall and under the east terrace walk is the old Orangery, which is now converted into a conservatory, containing large evergreens in tubs, such as Camellias, Allspice, Camphor, and Laurel trees, and in winter it forms a storehouse for bedding plants. The more tender of the latter are, however, propagated, sheltered, and otherwise cared for elsewhere.

The Fruit Houses in the Royal Gardens.

These are well furnished with Vines and other fruit trees, all in excellent condition. The varieties of Peaches grown indoors here are Royal George, Noblesse, and Stirling Castle, the last highly appreciated, and a well-known kind described in Scott's "Orchardist," but not named in the "Fruit Manual." In one of the Vineries here replanted last year the young canes, when in full growth, made about five joints every week, or about 1 ft. of wood every seven days. The varieties consist principally of Black Hamburgh and Foster's White Seedling. Another house of old Vines has been partly replanted, so that but little loss of fruit is experienced, half the old Vines being left to fruit until the young canes come into bearing, when the old rods will be cut away. On Muscats, West St. Peter's, Black Hamburgh, and Lady Downe's, we noticed heavy crops. These constitute the principal kinds grown here, but, for the sake of variety, single rods of other sorts are intermingled with them, such as Madresfield Court, Gros Colman, Duke of Buccleuch, and others. Some of the older Vines are being renovated by bringing up fresh rods from the bottom, which in time will take the places of the old Vines. In one large house, consisting of Lady Downe's, Alicante, West St. Peter's, Barbarossa, and Gros Colman, the crop of fruit is heavy, and excellent in quality. Large bunches are not aimed at here, the main object being to obtain even crops of medium-sized, large-berried clusters. As regards treatment it does not differ materially from that practised in other establishments; liberal use is made of liquid manure from the farm-yard, and the borders are mulched 2 in. thick with half-rotten manure, the object being to preserve a moist surface, and at the same time not to put on such a covering as would materially shut out sun-heat. Pot Vines here are now maturing sturdy, short-jointed canes outside, but the early pot Vine pit is being got ready, as forcing will be commenced in a few weeks. A feature of some interest here is a couple of Plum-houses from which fruit is obtained before that on the wall is fit to gather. The system of culture is nearly the same as that adopted for Peaches, the varieties being Victoria, Jefferson, and Washington. On the back wall of one of those houses a strong plant of the purple-fruited Guava (Psidium Cattleyanum) is now carrying a heavy crop. Pines are a special feature at Frogmore. The varieties grown are the Smooth and Prickly Cayennes for main crops, and a few Queens for summer consumption. The system of culture adopted here is rather a novel one, but is in every way successful. The Pines are planted out in brick pits, the soil used being a rich fibrous loam, which scarcely any amount of moisture will render sodden or sour. The beds below the soil in which the Pines are planted consist of Oak leaves about 3 ft. in thickness, and during the winter and spring additional heat is obtained by means of linings of stable manure or manure and leaves. Thus situated the plants make such vigorous growth that some of the thick, rigid leaves measure fully 4 in. across, and the fruit often weighs from 8 lb. to 9 lb. each. The heaviest fruit of the Prickly Cayenne grown here weighed 9 lb. 14 oz. The splendid Pines so often sent to the metropolitan exhibitions from Frogmore are all grown in brick pits on this plan, the secret of success being the rich and excellent soil employed, and the genial heat afforded by the Oak leaves. The last crops of Melons are just beginning to change colour, the varieties grown being Beechwood, Royal Ascot, Bromham Hall, and others. As soon as these are cut the beds will be renovated, and plants of Cucumbers for winter fruiting brought in to replace them. Cucumbers are now being grown in a large span-roofed glass-sided orchard-house, of which the accompanying is a sketch.

Span-roofed glass-sided Orchard-house.

The kind grown is Hedsor, a vigorous and prolific variety, which deserves to become better known than it is wherever fruit is required in quantity. As shown in our sketch, the plants rise from the ground-level, the only preparation being slightly raised borders of fibrous loam and a little rotten manure. Scarcely any fire-heat is given, yet the plants have made luxuriant and cleanly growth, some of the leaves being fully 14 in. in diameter, while fruit of excellent quality is being produced from the very base of the plants upwards. As soon as this crop is over, the house is devoted to the production of early Cherries in pots, these being at present out-of-doors in a sunny border.

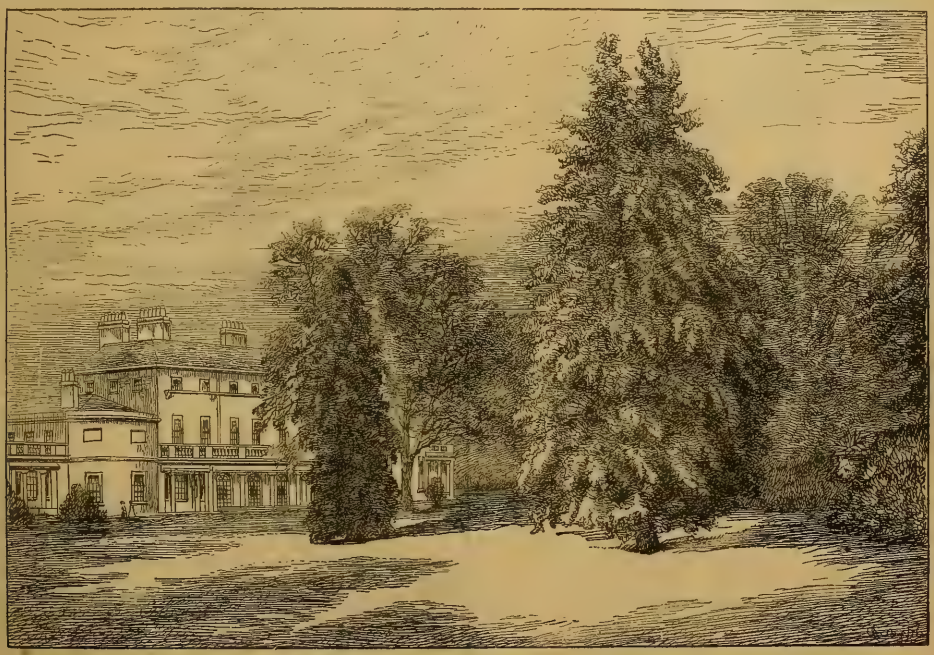
Plant Houses.

These are well arranged and stocked with fresh and healthy flowering and fine-foliaged plants, of which large quantities are required for decorative purposes at the Castle and elsewhere. Camellias are in most cases planted out, and in one of the large houses the central bed is filled with vigorous specimens well set with buds, and which promise to supply plenty of flowers for cutting. The varieties are principally Double White and Fimbriata, with a few of the coloured kinds for variety. One end of this house is a perfect thicket of the mauve-tinted Bougainvillea glabra intermixed with Plumbago cœrulea, Tea Roses being planted out in front and trained up the roof. Another plant largely grown here for cut bloom during the winter months is the common Heliotrope, which is found to answer better and flower more freely than many of the so-called improved varieties. Some plants of this are trained on the back wall of a moderately warm Peach-house, and are spurred back to the old rods during July or a little later just

like Vines. The result is an outburst of young shoots, each of which flowers freely through the winter and spring. Crotons, Palms, Ferns, Cyperus, Curculigo, Pandanus, and Aralias are largely grown as table plants in small pots, and these at the time of our visit were in excellent condition. Gardenias for cut flowers are found to succeed best planted out on beds near the glass in a warm, humid atmosphere, and in the same house the pearly-white Stephanotis is trained on the roof and flowers freely. The stages in one of the houses here are tastefully fringed with Ferns and Isolepis, among which the graceful Torenia asiatica is mingled with excellent effect. In another and cooler house we met with the new Fuchsia procumbens, which depends from the pots 3 ft. or more, its slender shoots being clothed with cordate foliage and bright red egg-shaped fruit. Some of the decorative plants are found to succeed best planted out during summer, and this is especially the case with Bouvardias and the scarlet-berried Solanums. Some bushy plants of S. capsicastrum were fully 2 ft. in diameter, and profusely laden with ripening fruit. Bouvardia jasminiflora and the rosy B. Vreelandi had also made a fresh and vigorous growth, and were flowering freely in the open borders, from which, however, they will shortly be lifted, and potted for winter blooming indoors. Poinsettias and Epiphyllums were looking well, the latter being very useful for decorative purposes grown in small pots, while Poinsettia heads can be cut for table decoration or other uses. Among the plants grown for cut flowers or as flowering decorative plants we noted Cypripedium insigne, C. barbatum, C. venustum, Begonia Dregei, B. manicata, B. nitida, Dendrobium nobile, Eucharis amazonica, Lycaste Skinneri, Odontoglossum Alexandræ, Cœlogyne cristata, and the old blue-flowered Eranthemum pulchellum. Ardisias are found to be very useful for winter decorations, and two-year-old seedlings are now about 1 ft. high, a tier of bright red berries being surmounted by a crown of glossy leaves. Primulas were looking well, as were also Chrysanthemums and other winter-blooming plants.

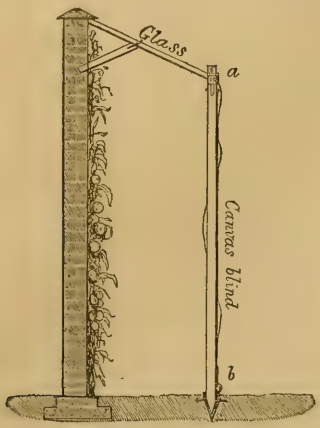
The Fruit Walls.

The walls which bound and intersect the fruit and kitchen gardens here are covered with well-trained trees, most of which at the time of our visit were carrying good crops of fine fruit. All the standard varieties of Peaches, Nectarines, Apricots, Plums, Cherries, and Pears are to be found on these walls, together with many varieties of sterling merit which have been raised at Frogmore, and which have not yet got into general cultivation elsewhere. On these walls Peaches and Nectarines may be said to hold the post of honour, and splendid crops are now gathered from them, a result in a great measure due to the careful manner in which the trees are protected in spring. This is one of the great secrets of successful Peach culture in this country, and to the neglect of protective measures or shelter of some kind may be attributed not only light crops, but also in some instances the premature decay of the trees. If the large Peach growers at Montreuil and other districts near Paris which have a mean annual temperature of 2° above that of London, find it necessary and advantageous to afford shelter to their trees during the spring months, how much more necessary must protection be in English gardens, especially in the Midland and Northern districts, on cold clay sub-soils. On some noble trees of Walburton Admirable we observed some splendid fruit, each certainly not less than 8 oz. in weight, and beautifully coloured; these will be followed by Salwey, which has not yet begun to colour, and which will carry the supply on until November, if the autumn continue sunny and mild. The Salwey is generally thought to be the latest Peach in cultivation, but such is not the case, for the Belle de St. Geslin, of French gardens, ripens a fortnight later than it does in a cold orchard-house, and is a better looking Peach. We noticed a small tree of the Stanwick Necta-



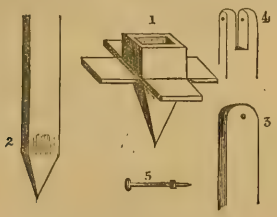
View of Frogmore House, with Salisburia adiantifolia in the foreground. (Drawn by Alfred Dawson from a photograph by Vernon Heath).

rine bearing fine fruit; this tree had been sheltered from rain during summer, in order to prevent the fruit from cracking, a fault to which this delicious Nectarine is liable on damp soils. In an orchard-house it succeeds admirably. This variety is one of the parents of most of the superior new Nectarines recently sent out from Sawbridgeworth. The Royal George Peach does unusually well here, being freer from mildew than in most places; and we also noted a good crop of the Frogmore Golden Peach, which is considered to be one of the very best of all the yellow-fleshed varieties. On the Nectarine wall there is now a good crop, consisting of Elruge, Violette Hâtive, Olden-



Peach-tree Protector.

burgh, and other standard varieties. Among seedling Nectarines raised at Frogmore we remarked Prince of Wales, said to be an excellent sort for late work; and the Frogmore Scarlet, another highly-coloured seedling, is also deserving of notice. The manner in which Peaches and other wall trees are sheltered and protected from spring frosts or cold rains at Frogmore deserves particular notice. The protection used consists of a glazed coping, which projects from the upper part of the wall, as shown in the accompanying sketch. This is supported by



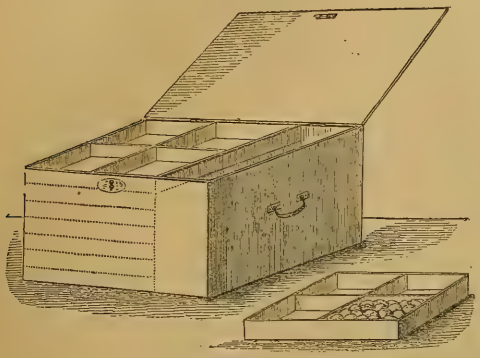
Socket for Protection Post.

bars or struts, which are firmly imbedded in the masonry and pinned fast to the woodwork of the coping. In front upright posts are fixed at about 9 ft. apart, their lower extremities being set in cast-iron sockets buried nearly level with the soil of the border, and the spaces between these posts are filled up with canvas blinds, which can be raised or lowered at pleasure by means of pulleys fixed at intervals along the front beading of the coping. These protections afford nearly all the advantage of a glass-covered Peach wall, and they are much less costly; if, as frequently happens while the trees are in bloom, we have a few days of rough weather, snow, or cold rains, and the blinds are allowed to remain down, sufficient light is admitted by the glass coping, and as the blinds are nearly 2 ft. from the trees there is no danger of high winds flapping them against the blossoms as often happens when canvas blinds are fixed too near the face of the wall. As soon as all danger from frost is over, say in May or June, the uprights and blinds are removed, leaving the self-supporting coping overhead. Long spaces of wall are here devoted to Moorpark and other Apricots, young Pears of the finer kinds being used as intermediates. One variety of Apricot, raised here and called the Early Frogmore, is found to be the earliest of all known varieties by nearly a fortnight; it is under average in size, but it is well worth a place on account of its earliness, productiveness, and good flavour. Pears are largely grown on different aspects, and it is singular to notice how very variable the produce of the same variety from different positions is not only in size, colour, and flavour, but also in time of ripening. About sixty varieties are cultivated here, and among them, as a matter of course, all the best standard kinds. Among the newer sorts were several of the Rev. Mr. Huyshe's seedlings and others which have been raised at Frogmore, the best of which perhaps is British Queen. A small tree of Madame Treyve bore seven splendid fruit; Pitmaston Duchess was also well represented, and is perhaps the most showy Pear of the Marie Louise type. Among Pears now in season may be named Late Jargonelles, Williams' Bon Chrétien, and others. Late Pears appear especially abundant here, Beurré Rance, Fondante d'Automne, Easter Beurré, Gansel's Bergamot, Joséphine de Malines, Beurré Bachelier, and others, bringing forward excellent crops. Of Plums there is a fair sprinkling, consisting of Gages, Victorias, and such sorts as Jefferson, Kirke's, Washington, Reine Claude de Bavay, Coe's Golden Drop, Late Red, and others of nearly equal merit. Some of the old trees are beginning to fail at their extremities, but intermediates are being planted on other walls to replace them, when the old Plums will in their turn give place to Pears. This rotation of crops, although tolerably well understood in the case of vegetables or cereals, is often lost sight of in that of fruit culture. On the same plan old Cherries will give place to young Pears, while they will be succeeded by Plums, and so on. Of Cherries, which are largely grown here, fruit is gathered from June until November, and at the time of our visit (September 9) we found some splendid fruit of Morellos and Late Dukes still on the walls. In the case of one of the trees of Late Duke our attention was directed to a branch on which the fruit had not as yet finished colouring, while that on other parts of the tree was fully ripe; if, therefore, this sport can be perpetuated by budding, a still later variety of the Late Duke may be obtained than that which we now possess. One of the outer walls has been devoted to the culture of cordon Gooseberries and Currants for a supply of late dessert fruit; and the young trees, although only two years old from cuttings, have made good progress. It is to be regretted that north walls are not more utilised in this way than they are, inasmuch as the result would be fresh Gooseberries and Currants, useful in August and September, long after the main crops were over. From the small size of the trees they are admirably adapted for intermediates between Morello Cherries or Pears; in fact, they might be planted on every spare yard of wall where there is not room for other fruits.

The Fruit Room.

To all large establishments the fruit-room and packing-shed form important adjuncts, and this is especially the case at Frogmore, where great quantities of choice fruits must be stored. The fruit-rooms here are airy and well ventilated, and capable of holding immense quantities of fruit. They are furnished with lathwork shelves around the sides and tables in the centre. Here we saw large quantities of choice Gage, Victoria, and other Plums, Peaches, Nectarines, &c., being packed for a journey to Balmoral. When tender fruits have to be sent such long distances, it is of course necessary that the packing be skilfully performed. Of the way in which this is done at Frogmore the accompanying illustration will give some idea. The size of the boxes, which are made of wood, is a matter of but little moment, but the trays must be made to fit neatly into their places, and may be deep for Grapes and

Peaches, and shallow for Plums, Strawberries, Cherries, and other small fruits. In the case of Plums each fruit is wrapped in part of a Vine leaf and the whole closely packed in the trays, so that any movement or displacement is impossible. The trays are placed in the larger compartment of the box, as represented, and the smaller compartment is used for miscellaneous vegetables, herbs, and other produce not so liable to



Packing-box for fruit.

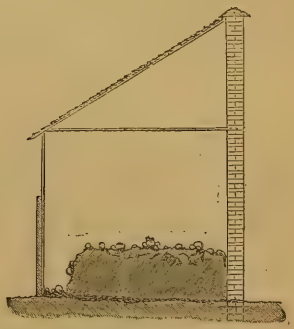
injury. Very little packing material is used, the fruits being packed firmly and neatly together, the bottom of one tray forming, as it were, a lid for the one below it. A pad of cotton wool is placed on the top tray, and the lid of the box when shut presses the whole firm and tight.

The Kitchen Gardens.

These were formed about thirty-two years ago, and cover about 30 acres, which are enclosed and intersected by some 6 miles of fruit-tree walls. The borders along the sides of the walks are planted principally with Apples, which are for the most part trained balloon-fashion, the points of their branches being all directed towards the ground. Some of these trees, even in this comparatively fruitless year, are bearing good crops, and one variety, viz., the Rosemary Russet, a valuable winter dessert Apple, was pointed out to us as having never missed a crop during the past thirty years. Ribston Pippin, Wyken Pippin, and other well-known kinds, are also doing well. Some young trees, trained in the form of a column, and worked on the Doucin and other dwarfing stocks, are now bearing very fine fruit. Standard Apples, Pears, and Plums have also done fairly well here this season, some, indeed, bearing heavy crops. Among Plums for preserving purposes we found a long row of the German Prune, or Zeutzen as it is called at Frogmore, but in other gardens the Quetsche Plum. This is a sure bearer, and a kind which is well worth growing for market purposes, being much larger than the Damson; like the latter, too, it comes true from seed. Strawberries are extensively cultivated at Frogmore; indeed, there cannot be less than 2 acres under this crop; and among the different varieties grown it has been found that those with pubescent leaves, such as British Queen, Dr. Hogg, and others, do not succeed so well as smooth-leaved kinds. The best are La Grosse Sucrée and Prince of Wales, two of the earliest for out-door crops. The kind called James Veitch bears very large fruit, each berry sometimes weighing 3 oz. or 4 oz.; indeed, four fruits of this variety have been produced here which weighed 1 lb. Fairy Queen is another distinct and productive variety; it is one of the many seedling Strawberries that have been raised at Frogmore, and an excellent kind it is, so productive that even the joints of the young runners produce clusters of flowers throughout the spring and autumn. Other kinds grown here are Cockscomb, Frogmore Late Pine, Sir Charles Napier, Keen's Seedling, British Queen, President, and Lucas. The system of culture adopted is to plant in rows 2½ ft. apart on a piece of open, well-tilled ground, to mulch throughout the summer with half-rotten manure, to plant a fresh plot every year, and to grub up the four or five year old plants regularly. The ground on which these grow, after being manured and trenched, or dug, is then devoted to other crops. By this rotation the ground never becomes exhausted by any one crop. This practice also greatly assists in keeping wireworm and other destructive pests in check, inasmuch as they never have time to thoroughly establish themselves. Among vegetables we noticed some extensive plots of Coleworts and Brussels Sprouts in fine condition, and about 3 acres of Potatoes, which this year promise to ripen without being affected by the disease. They consisted of

Mode of Protecting early border Vegetables.

Fortyfold, York Regent, Myatt's Ashleaf, Dunbar Regent Old Ashtop Kidney, Bryanston Kidney, Dalmahoy, and Milky White. Blinkworth Challenge, a large white kidney, does splendidly here, some of the tubers weighing considerably more than 1 lb., but what is of more importance the general crop is of good average size, clean, and shapely. A simple and effective plan of sheltering early Potatoes, French Beans, Lettuce, Endive, Radishes, and other early crops from spring frosts, is here adopted. Stout pegs are driven into the ground in rows along the border, leaving their tops level, and about 1 ft. or more above the surface. On these laths or long strips of deal are nailed, as shown in our sketch; and on this readily constructed



Section of Mushroom-shed.

framework a covering of tiffany or scrim canvas is fastened with tin tacks and leather wads, the latter being used to keep the heads of the tacks from slipping through or tearing such light material. These coverings keep off several degrees of frost, and what is of nearly equal importance, cold cutting winds. They are easily applied, and soon repay their cost by the earliness and superior quality of the produce grown under them. Early Potatoes have been obtained from these protected borders at a time when the market price of such produce was from 9d. to 1s. per lb. Of Beet, Horseradish, and Seakale for forcing we noticed thriving plantations, and also an extensive quarter of Celery, which is grown in short rows

across the ridges. No fallow ground is ever to be seen here, for directly one crop is cleared off another is planted as soon as the necessary preparation for it has been made. Tomatoes on walls have done well this warm summer. The variety grown here is a very prolific and handsome selection, evidently from the old red type. Mushrooms, which are largely in demand for culinary purposes, are produced here in abundance from a bed made up in an ordinary barrow shed; indeed, wherever a little of the manure had been allowed to lie on the floor of the shed, milk-white buttons were appearing in great abundance. This bed was made up in the ordinary way, and is fully exposed to the light. Our sketch shows a section of this bed, and of the shed in which it is placed, by which it will be seen that the expensive appliances recommended as essential to Mushroom culture are often unnecessary. B.

GATE LODGES IN THE PARKS.

At this season of the year many residing in remote country districts take a trip to London to inspect the floral decorations in the parks with the view of gleaning some useful lesson for future guidance; and, as far as my observations have extended, great credit is due as regards the improved aspect and general good keeping of these (if I may be allowed the term) noble institutions. But amongst hints as to what to adopt I have also made note of something to avoid, and notably the floral decoration connected with gate lodges, which would certainly not pass current for good taste in the country. The gate lodge occupies such a conspicuous position both on entering and leaving parks, both public and private, that the style of floral decoration adopted cannot fail to attract the attention of every visitor. The entrances to country mansions are usually overhung by lofty trees and half hidden among creepers, and the display of "bedding out" is generally confined to one or two large clumps or masses of brilliantly-coloured plants. But around the lodges of the London parks, in addition to carpet beds in profusion usually skilfully planted, there is in most cases such an array of ordinary bedding plants in rows of red flower-pots, that one stands aghast, wondering whether it is the plants or the pots that are intended for exhibition. Except in the most primitive cottage windows, we have nothing approaching such a display of bad taste in the country. An object in floral decorations of all kinds is to conceal the existence of pots as effectually as possible, so that whether in plant-houses or in groups temporarily arranged, nothing should meet the eye but masses of living verdure. Where flowers are considered necessary in windows, boxes are far better than rows of pots, which suggest a cottage flower show, and rob the stateliest edifice of half its grandeur, while plants set in full sunshine in unprotected pots tell their own tale as regards the severe battle for life which they have to fight; they should be plunged in some non-conducting material, so that the usually not over-abundant labour may be economised and expended on objects more worthy of attention. James Groom.

The Rose of Jericho.—In a recent number of the "Gartenflora" a notice is given of a curious, but not by any means newly-discovered, annual inhabiting the sandy regions of Syria and North Africa, the Anastatica hierochontica, better known as the Rose of Jericho. The remarkable point about it is the curious and admirable adaptation of its habits to the very hard circumstances under which it exists. A mere annual in a desert has not much chance of perpetuating its existence, but this plant manages to do it. As soon as its seeds are well formed the leaves fall, the branches curl round and make a ball round the seed-vessel, and the roots soon become loosened. Then comes the wind and makes a football of it, hither and thither. During this time the seed-vessels remain closed, but the first rain causes the branches to unfold and the seed-pods to open. This is its chance, and a brief one, for the continued reproduction of an annual plant on the shifting sands of the desert must be speedy germination and quick growth. The strange prickly, almost or quite leafless, shrubs and under-shrubs characteristic of the desert flora retain their vitality for years, alternately buried beneath the sand and exposed to the influences of the sun and air, but an annual plant would probably soon become extinct under the same conditions. According to a writer in the periodical above mentioned, seeds of the Rose of Jericho sown about five o'clock in the afternoon had germinated by one o'clock on the following day, and their rootlets had already pierced the soil. These seeds were taken from a plant purchased at the Vienna Exhibition, and twelve out of fifteen germinated in the time mentioned in a pot covered over with a saucer, and standing in an ordinary living room. So exquisite an accommodation to the necessities of its position is very striking.

PLATE XXXIX.

BORONIAS.

(WITH A COLOURED FIGURE OF B. ELATIOR.)

One of the best proofs of the healthy growth of horticulture lies in the fact that many old and neglected genera are again becoming popular. During the past few years, great numbers of new plants have been introduced, the majority of which are remarkable chiefly for the beauty of their foliage, but, although beautiful leaves may captivate the eye, a lack of flowers in a stove, and especially in a greenhouse or conservatory, is often felt to be a grievous loss, a fact which many will fully endorse; in spite of this, however, little has of late years been done by plant collectors to introduce good flowering plants for the greenhouse, and even less has been done by cultivators to uphold the merits of those which we already possess. In my younger days a well-grown collection of hard-wooded plants was considered to be the chief ornament of a greenhouse, but now, with a few praiseworthy exceptions, we look in vain for the beautiful flowers of Hoveas, Pimeleas, Chironias, Leschenaultias, Daviesias, Boronias, and plants of a similar character; indeed, many of the best of these are now unknown to young cultivators of the present day, and whilst we have discarded so many of these beautiful-flowering plants, we have done nothing towards adequately supplying their places; we therefore find it necessary to fall back upon Cape and New Holland plants again. Doubtless one of the chief reasons for relinquishing the cultivation of such plants is their comparatively slow growth, and the time required to form a handsome, well-developed specimen. Fast-growing subjects crowd upon us year after year, each being more beautiful than its predecessor; but yet the true plant-lover finds an irreparable blank in the loss sustained by the thrusting out of many of his old favourites; two new species of Boronias that have lately been brought into notice will therefore be welcomed with unusual interest. I allude to the beautiful sweet-scented B. megastigma, and the subject of our illustration, B. elatior. The genus Boronia includes about fifty-seven species and several varieties, all of which are extremely beautiful; they are natives of Australia, and are consequently what are termed greenhouse plants. Nevertheless, they enjoy a little additional warmth during winter and early spring; their culture is by no means difficult, the soil in which they thrive best being good, fibry, sandy peat intermixed with a small portion of light loam, and being mostly natives of barren, sandy localities, the drainage must be kept in good working order, as stagnant water about their roots is highly detrimental to them, although we are told that one or two species in their natural state seem equally at home in boggy and in sandy places. In some few instances B. serrulata and one or two others have been found difficult to keep in a thoroughly healthy condition, a circumstance which I attribute to the use of hard spring water and waters strongly impregnated with iron, for sickly plants have been restored to perfect health by watering them with rain-water only. The following are a few of the best Boronias at present in cultivation:—

Boronia elatior, faithfully rendered in our illustration, is a charming plant of quite recent introduction, and one which deserves to be grown in every collection of greenhouse plants, however small. It is a somewhat tall-growing shrub, having hirsute branches and pinnate, dark green leaves; its flowers, which are borne in profusion, and which last long in perfection, are rosy-red, and are produced in spring and early summer. It is found in various parts of Western Australia.

B. megastigma is an erect-growing, twiggy shrub, with pinnate leaves and narrow, smooth, dark green leaflets; the peduncles bear a single large flower, which is deep purplish-brown outside and yellow within. It emits a delicious odour resembling that of Violets, and it blooms at various seasons. Native of Western Australia.

B. alata.—This blooms during May and June, and is a native of various parts of Western Australia. It is usually smooth, but sometimes slightly hairy and inclined to be glaucous on the upper surfaces, branches angular, leaves pinnate, leaflets oblong, obtuse, flowers large, borne in terminal cymes, and rosy-red in colour.

B. ledifolia.—This species is subject to considerable variation; it is usually an erect plant, with slightly tomentose branches and

THE ROSY BORONIA. (B. ELATIOR.)

trifoliate leaves; leaflets linear-oblong, with revolute margins, smooth on the upper side, but clothed with a rusty tomentum beneath; peduncles bearing a single rose-pink flower. Native of Port Jackson.

B. Fraseri.—A neat-branching shrub, which usually attains a height of about 3 ft. The branches, which are smooth, bearing pinnate leaves, the leaflets being distant, and the terminal one much the longest; the leaves are oblong-lanceolate, smooth, deep green above, but paler below; flowers bright-red, borne in umbels of from four to six upon short peduncles. It blooms late in spring. Native of New South Wales.

B. pulchella.—This is an elegant species, which attains a height of from 2 ft. to 3 ft.; branches slightly pubescent, leaves pinnate, leaflets linear-obtuse, pale green above; flowers large, bright rosy-pink. It blooms during May and June, and is a native of Western Australia.

B. pinnata.—This is a somewhat variable plant, with slightly angular branches, bearing pinnate glabrous leaves; leaflets usually in three or four pairs (the terminal leaflet long), linear-acute, or oblong-lanceolate; flowers large, from three to four on a peduncle rosy-pink, very fragrant; blooms in spring. It is a native of New South Wales.

B. crenulata.—A compact-growing shrub, which attains a height of from 2 ft. to 3 ft.; leaves somewhat cuneate, coriaceous, and slightly toothed on the upper edge; peduncle mostly bi-flowered; colour reddish-pink. It blooms during June and July, and is a native of Western Australia.

B. serrulata.—This resembles the preceding species, but is larger and more robust; leaves closely set, entire, obovate, serrulate on the upper side, coriaceous, and bright green; flowers large, rosy-red, and very fragrant. It blooms in spring and early summer. Native of Port Jackson. W. H. G.

MY DIARY FOR SEVEN YEARS.

By W. DENNING.

September 25.—*Sowing*—Seeds for another crop of Cucumbers, to be ready to plant on the 20th December. *Potting* up "show" and young autumn-struck variegated Pelargoniums; also Calceolarias, Snowdrops, Crocuses, Van Thol Tulips, and remainder of Roman Hyacinths. *Miscellaneous*—Putting Caladiums on back flue to dry off; also pot Violets into a frame; Primulas into a heated pit; tree Carnations into pits, and the earliest Cinerarias into a position near the glass. Planting more Roses for button-hole bouquets in a pit, the sorts being Isabella Sprunt, Cheshunt Hybrid, Devoniensis, Safrano, Niphetos, Madame Falcot, and Mme. Van Houtte. Netting Coe's Golden Drop Plums on a north wall. Syringing young Vines with sulphur-water, to prevent mildew. Gathering Ribston Pippin Apples, and more Louise Bonne of Jersey Pears from espaliers. Thrashing some Walnuts. Gathering button Mushrooms for pickling. Digging ground for Cabbage and Lettuce; clipping Yew hedges; hoeing among young Strawberry plants, Spinach, and Endive.

Sept. 26.—*Potting* — Schizanthus, also a few Gem Nasturtiums for early spring work; putting Callas into pits; also under glass all bedding plant cuttings struck out-of-doors. *Planting* Violets in frame. Making up gaps in Cabbage bed; training and cleaning conservatory creepers; Peaches and Plums out-of-doors nearly over; hoeing among Winter Greens; picking over Rose garden; beginning to cover late French Beans out-of-doors at night.

Sept. 27.—*Shifting* young flowering Cinerarias; taking up all bedding plants intended to be saved; putting greenhouse plants under cover. *Planting* Cabbages sown on the 6th of August; pricking out Cabbages for spring planting; staking Heliotropes. *Miscellaneous*—Gathering Napoleon, Beurré d'Aremberg, Moorfowl Egg, and Bergamot Pears, also Brown Beurré and Gansel's Bergamot, and finished gathering Marie Louise Pears; digging border for more Spinach; earthing-up fourth row of White Celery fully and one row of Red; keeping French Beans about 60° at night if the nights be cold, and Cucumbers about 70°; giving Odontoglossum-house a little heat—night cold; Tuberoses throwing up flower-spikes.

Sept. 28.—*Sowing* a border of Spinach which will prove useful in spring; getting under cover all tree Carnations showing flower, all Dr. Lindley and other Pelargoniums in flower, the white and yellow Chrysanthemums, and putting Bouvardias in heat for drawing-room decoration; taking up Centaureas, Carnations, Scrophluarias, and Gazanias, and potting them. *Shifting* stocks into flowering pots. *Miscellaneous*—Tying up Mignonette in pots, and giving tree Mignonette a good tie in; bunching up Basil and Marjoram; washing Orange trees; gathering Wine-sour Plums, also Crassane, Bergamot, Napoleon, Thompson's, Louise Bonne, Jalousie de Fontenay, and Louise Bonne of Jersey Pears; sorting seed Potatoes; cleaning Stanhopeas; looking over Dendrobiums again for thrips; cleaning out the flues of Mushroom shed and orchard house; salting walks.

Sept. 29.—*Potting*—Batemannia and Pescatorea in peat, fibre, and Sphagnum; shifting Humeas and Schizanthus into 8-in. pots; removing all Peach trees in pots from the orchard-house and putting in Chrysanthemums. *Miscellaneous* — Giving Mushroom-bed a sprinkling of water and covering it with hay; cutting flowers of Gardenias and Violets, both of which are in excellent condition; beginning to add to Vine borders; preparing ground for early Peas; getting a good piece of ground dug for Lettuces; making a new Mushroom-bed; manuring and digging ground for Carrots to lay all winter in order to try to avoid grubs; top-dressing early Vinery border; fully thinning the latest Turnips; looking among Odontoglossums for thrips; Cucumbers should not be kept higher than about 70° at night.

Sept. 30.—*Planting*—Lily of the Valley, Guernsey and Bella donna Lilies, Schizostylis, and Spiræas in sheltered positions; also Cucumbers to come on in January. *Miscellaneous*—Making up conservatory baskets with Selaginella, Heliotropes, Centaurea gymnocarpa, Fuchsias, and Rollisson's Unique, scarlet, and Ivy-leaf Pelargoniums; taking Dendrobium cretaceum and D. primulinum out of East Indian house; shifting Spiræa palmata; tying Anne Boleyn Pinks set with flower-buds, and placing them under cover; netting the Fellemberg Plum; finished gathering Reinette du Canada Apples; gathering the last of the Apricots; digging alleys between Asparagus beds. *Flowers in bloom* — Heaths, Justicias, Violets, Mignonette, Bouvardias, scarlet, French, and double Pelargoniums, Heliotropes, Anemones, Clove and other Carnations, Nemophilas, Roses, Tuberoses, Gardenias, Pansies, Spiræas, Stephanotis, Stocks, Calceolarias, Fuchsias, Hydrangeas, Lobelias, Cockscombs, Petunias, Myrtles, Musk, blue Cornflowers, Sweet Peas, Lilium auratum and L. lancifolium, Balsams, Begonias, Asters, and Rhodanthes.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Preparation must now be made for immediately getting in hard-wooded plants, such as Heaths, Epacrises, Genistas, and all others of a similar character. These will not suffer injury out-of-doors so long as there is no frost or excessive rains; but on the appearance of either, all subjects like the above-named should be housed at once. A little judgment should be exercised in arranging them in their winter quarters, for although they all need as much light as can be afforded them, the Heaths should have the lightest, most airy, and coolest end of the house; and any of the more delicate hard-wooded subjects should have plenty of light and be put where the temperature will be somewhat warmer than that in which the Heaths are placed. Genistas and Epacrises will thrive where there is not quite so much light as required by the former plants. Examine all before they are taken in the house to see that they are free from aphides, red spider, and thrips, for if any of these insects only exist in small numbers, they will ultimately leave quantities of eggs that will come to life in the spring. Washing with weak Gishurst water (about 2 oz. to the gallon) will be found the best means to get rid of red spider and thrips; Tobacco fumigation is the most convenient remedy for destroying aphides on all hard-wooded plants.

Camellias should also be at once got into their winter quarters; they likewise will succeed in a position where there is less light than many hard-wooded subjects. Nothing adds more to the appearance of these plants than keeping the leaves clean; it is also essential to their health that no accumulations of dust be allowed upon them, for if they be at all affected with brown scale the dirt will stick to the glutinous excrement of the insect, and this, if not removed, will cause the foliage to turn yellow and fall off. If infested with white scale, the best implement for removing it from the wood is an ordinary tooth-brush, after which sponge the leaves one by one on both the upper and under surfaces. Wash the pots of all plants as they are taken inside, and remove any Moss that may have accumulated upon the soil.

Pelargoniums, both large-flowered and fancy varieties, may yet remain out in cold pits or frames; but the soil must not be allowed to get too wet through the lights being off; the latter should now be on during the night and day, tilting them as the plants require air.

Kalosanthes should be taken in; however well these have ripened through the summer they should be placed well up to the roof, or the under leaves near the base of the branches are liable to suffer; give them no more water than what is necessary to keep the roots in a healthy state, but do not let them be so dry as to cause the plants to flag; they are easily struck at any season, rooting from the smallest slip. If cuttings be now put in they will get established before winter, and make growth next summer considerably in advance of those struck in the spring: some of the weaker inside growths that are not likely to flower, the removal of which will in no way interfere with the next year's bloom, will answer for cuttings. Take them off about 5 in. or 6 in. long, strip the leaves from 2 in. of the bottom of the stems, and insert five or six of them close together in 4-in. pots filled with sifted loam to which has been added one-fourth of sand; the pots must be well drained for either large or small specimens of Kalosanthes, as they cannot bear anything approaching stagnant moisture; give a little water, but do not cover the cuttings at all in the usual way under propagating glasses, or they will be liable to damp. They will root in an ordinary greenhouse temperature, but if there be a frame or pit a few degrees warmer the plants will thrive all the better. In the spring the points should be pinched out, and each pot of cuttings shifted entire into larger pots, as in this way they will make fair-sized plants for flowering the ensuing year.

Bedding Plants.—The earlier inserted cuttings will by this time be rooted, and should have more air and as much light as possible daily, in order to harden them before winter. If any trace of mildew existed on the plants from which the Verbena cuttings were taken, it will have been almost certain to have made its appearance whilst they were kept close for the purpose of rooting. They should now be carefully examined, and, if any be found, dust them at once with flowers of sulphur; the white varieties are most subject to it, but if care be taken through the autumn to apply sulphur as soon as the mildew is discovered, the pest may be completely eradicated before spring propagation commences. The liability of these plants to suffer from mildew has caused many to give up their cultivation, yet they are more continuous in their blooming and less objectionably formal than many bedding subjects that have taken their place, with the additional advantage that they are most useful for cutting all through the late summer months when flowers are not superabundant.

Celosias for autumn flowering that are now fast filling their pots with roots, must be well supplied with manure-water, the use of which for almost all plants that are required to bloom in comparatively small pots is not sufficiently understood. Keep them turned round to the light, which is not only necessary to preserve a uniform shape, but also to allow every part of the plants their full share of light, without which the leaves of those that are of a soft nature and short endurance are liable to fall off before the flowering is over, in which case the beauty of the plants is lost, for, however full of bloom a plant may be, without a sufficiency of healthy foliage it is shorn of half its attractiveness.

Mushrooms.—There is no better time of the year than the present for amateurs who have not had much experience in Mushroom growing to commence operations; for beds prepared at this season are more likely to succeed than when the weather is either warmer or colder; another advantage is that in the latter part of the year they may be grown in any moderately close shed or building; neither is it necessary to have at command so much manure as many suppose. One of the most successful growers of Mushrooms I ever knew always used half road-scrapings in a moderately dry state, mixed with the stable manure; beds so made are less liable to overheat, and they retain the right degree of moisture for a longer time than when made of manure alone. A cart-load of fresh stable manure with most of the long littery portion removed, will make a good bed, mixed with an equal quantity of loam or road-scrapings, whichever is most convenient at hand. First shake up the manure well, putting it under cover; if there be not sufficient shed-room for the purpose, anything in the shape of shutters that will keep off the wet will answer; when it has got warm by fermentation turn it over and mix the loam or road-scrapings with it, letting it remain for a few days, when the mixture will attain the requisite gentle heat; it may then be made up in the usual way about 15 in. or 18 in. thick, beating it solid with the fork, and smoothing the top; it is not likely to heat too much, yet it will be better to wait a few days before putting in the spawn; a stick or two should be inserted to ascertain the heat of the bed, and when the heat begins to wane the spawn may be laid on and covered with about 2 in. of fine soil, spread over and beaten smooth with the back of the spade. The advisability of covering it with litter or leaving it bare depends upon the situation of the bed; if the place be dark and can be shut up quite close so as to preserve a humid atmosphere, it may be left bare, especially if there be sufficient fresh manure at command in the place where the bed is made, so as to emit a gentle heat. The manure so used can afterwards be made up into a bed, and that will afford a successional crop. Where these conditions are not existent, it is better to cover the bed with about 6 in. of dry litter.

Loam and Peat for Potting.—Where plants are grown, even of the commonest kinds, to give a reasonable chance for their successful development, the necessary soils for potting should be procured, and there is no time in the year when either loam or peat is in such good condition for laying up as in the early part of autumn. Next in importance to the essential elements naturally contained in the soil are the fibrous roots of the Grasses that have grown upon it. These, in the course of their decomposition, not only play an important part in furnishing food for the plants that are cultivated, but they act as a medium to keep the soil in a sufficiently open, porous state, and the object of the cultivator should be to procure his soil for potting purposes when the roots of these Grasses are in the best matured and toughest condition, so as to secure as slow a decomposition as possible. A little reflection will suffice to show that these conditions must be more fully present at the end of the growing season than at any other time. It is not well to dig any description of potting soil when it is either very dry or very wet; if laid together in the former state it is never in a sufficiently moist state for use, and if too wet it is equally unfit for use for months afterwards, but as soon as there has been sufficient rain to moisten it to the depth of 3 in. or 4 in., it should at once be got in and stacked up ridge-fashion; in this way it will throw off the winter rains and not become too much saturated with wet. The best loam is of a yellow colour, and if it naturally contain a little sand all the better. Peat for pot plants should be of a brown colour, not the close, black, hard, or boggy stuff sometimes used; both peat and loam are of the best quality where the Grasses they produce have grown the densest, for they will most assuredly contain the greatest amount of fibre. Potting soil is sometimes stacked up in covered sheds, but it is much better in the open air, unless when it is too wet for immediate use, in which case as much as will be wanted at once should be spread thinly in an open shed where the wind will be able to act upon it. Where plants are grown that require Sphagnum, it is well to get as much of this at the present time as will be needed for the year, for a severe frost sometimes injures it materially; if it be dried and put away in that condition, it will keep for a long time. It is as well also now to get in some silver sand; this is best put in a dry place, for if the potting soil be too wet, the sand when mixed with it will help to dry it sufficiently for use.

Greenhouses.

The lateness of the season and the unsettled state of the weather render it unsafe to have choice plants any longer exposed, and they should therefore be housed at once, or means taken to shelter them from any rainfall that may now take place in case the glass structures are not ready for their reception. Before re-placing them in their winter quarters, see that each individual plant is entirely free from thrips and spider, or other insects to which they are liable, and if not no pains should be spared in rendering them so, or they will be sure to spread and entail much labour hereafter. The pots, too, should be thoroughly scrubbed and cleaned, so as to remove any accumulation of dirt or conferva that may have gathered on them while they have been standing out in the open air. The frequent use of manure-water which it is necessary to apply to some plants is sure to cause a thin filmy incrustation on the surface of the soil, which, if not removed, impermeably seals it from the air, and soon proves fatal to healthy root-action. Not only is this the case, but it is impossible to see when a plant requires water if allowed to remain in that state, and of all the causes that contribute to failure, there is none more general or effective in bringing it about than negligent, hap-hazard watering. It will then be readily seen how important it is to have the surface soil perfectly free from any matter likely to obstruct the air or to mislead as to the state of the ball of the plant. Even where clear, soft water is used, it is a common occurrence for the surface soil to become coated over with a minute, mossy, vegetable growth, and this often takes place with Heaths and Azaleas, or other hard-wooded plants that have peat to grow in, on account of the large amount of vegetable such soils contain. In removing it from these great care should be exercised in scraping it away that the bark of the main roots does not become injured, as most of these will invariably be found close to the surface immediately contiguous to the collar of the plant. Nothing perhaps answers better in clearing such deposit away than the top of a broad wooden label, which from its blunt, soft nature, is less liable to erase the bark than an instrument of any other kind would be. As regards hard-wooded plants, in clearing it off it is best not to stir or disturb

the surface deeper or more than is absolutely necessary for removing the objectionable deposit, otherwise the roots will be interfered with and damaged without any good results being obtained. Light in great abundance is of the utmost importance to the health of plants during the winter months, and no better opportunity will be afforded than while the houses are empty to give the glass and woodwork a thorough washing and cleansing, in order that they may get as much as it is possible to have at that dull season. The laps of the glass become filled up by a deposit of dust, soot, and other matters that drift in from the outside and effect a lodgment, and this should be forced out by a free use of the syringe or garden engine, that any deposit of moisture on the inner surface during the winter may pass freely through instead of dripping on the inmates of the house, thereby causing injury. It is only on the observance of such trifling matters as these that success is assured in plant cultivation, and cleanliness is quite as essential to their well-being, or even more so than it is to the animal creation. This being the case, it is of the utmost importance that the leaves or lungs through which the plants breathe should be kept perfectly clean, for if these vital organs be choked up, they soon show symptoms of declining health, and if the cause be not removed, eventually die outright. Now that the growth is mature and the leaves thick and firm, most plants will stand a good washing from the garden engine, which may with advantage be given them before being housed if they show the least appearance of dirt, or have to be dipped in Tobacco water or other insecticide to free them from thrips or scale. The deposit the latter secretes on such large-leaved plants as Camellias, Orange trees, &c., can scarcely be removed without hand-washing, on account of the adhesive nature of the material they exude, and where any plants have been infested with these troublesome pests they should be thoroughly cleansed at once by giving them a good sponging with soap and water; in short, it is impossible to attach too much importance to cleanliness in plant cultivation, especially in preparing for the short, dull days that will soon be upon us, when every ray of light is of value from the vivifying and purifying influence it carries with it. As fires will be shortly needed, the flues around the boilers and the main heading therefrom should be examined and cleaned out if necessary, in order that there may be no failure in the draught when frosty nights occur; and to make sure on this head it is advisable to test the furnaces by lighting a fire once or twice before it is actually wanted.—J. Sheppard.

Orchids.

It is highly important at all times that the night temperature of an Orchid-house should be from 5° to 10° lower than the day temperature. Generally speaking, in all parts of the world throughout the whole year, with but few exceptions, the temperature in the open air gradually declines as night comes on, and continues to fall until just before sunrise, at which time, as a rule, it is at the lowest. This allows plants to take that nightly repose which is necessary to them. That plants rest during the night is forcibly shown by the closing up of the foliage of many of them, such as that of Mimosas, Acacias, some Marantas, &c. Unless the night temperature for plants under cultivation be properly restricted, they are sure to be injured; an occasional error in this direction may be of little consequence, but if persisted in the results will be serious. Many who are well aware of this fact unwittingly allow the night temperature to equal that of the day, and even the reverse of the proper order of things to take place from sheer inattention. The cultivator should frequently make himself acquainted with the night temperature of the houses by consulting the thermometer; he can then regulate the heat accordingly by means of the valves, &c. In cold weather and in winter, when the heating apparatus is kept going more or less day and night, this is not difficult to do, but at the present time, when in the Cattleya-house artificial heat is only required at night and occasionally during the day, and in the cold Odontoglossum-house where artificial heat should only be employed night or day, when the low temperature required cannot be maintained without it, it is more difficult to regulate. There are times when the heating apparatus is only required to raise the temperature a few degrees, in order to permit of the ventilators being opened for the purpose of giving air. At other times the weather may be so mild as to render artificial heat unnecessary for some time in the cold Odontoglossum-house; but when the weather turns cold, and it becomes absolutely necessary to employ artificial heat, the greatest care should be taken that the temperature does not get too high, the transition from a proper temperature maintained by solar heat to one of artificial heat being quite change enough for the plants to contend against, without the temperature being made excessive by artificial means; this is injurious in the daytime but doubly so at night. Often in the early autumn, particularly in the Odontoglossum-house, the cultivator has no need of artificial heat in the daytime; but if the afternoon turn cold, he has the heat turned on; or if the house have a boiler to itself, the fire lighted, so as to obtain a little extra heat during the night. In such a case as this, and in others when fires are first started, or only occasionally used, the plants are frequently injured by excessive night temperature. It is by attending to minor details of this kind that a collection of Orchids is kept in good condition.—James O'Brien.

Flower Garden.

The late heavy rains and cold, damp nights have already had a bad effect on most flowering plants, while, on the other hand, the beauty of those grown principally for the effect produced by their foliage has been considerably enhanced. This is particularly the case with such subjects as Alternantheras, ornamental-foliaged Pelargoniums, Echeverias, Sedums, Mysembryanthemum cordifolium variegatum, and Golden Pyrethrum, all of which now show their delicacy of colouring in the richest profusion. As the value of plants for flower garden decoration depends very much on the length of time they will last in perfection, choice should now be made of such as show their good qualities, with a view to increasing the stock as rapidly as possible. To save having superfluous numbers of any particular kind the plan of bedding should at once be decided on, at least as regards the more important part of it, which can be better done at this season than any other, as the adaptability of the plants for particular purposes develops itself in a more marked manner when seen growing side by side under the same conditions, than they do at any other time. It will be well, therefore, to make a careful inspection of the whole garden during the present month, and to note the various leading features of the different occupants of the beds, that a more pleasing combination may be carried out in any fresh arrangement that may take place. Stock plants of the more tender subjects used in bedding, such as Coleus, Iresine, Alternanthera, &c., should be got under cover at once, as it will not be safe to risk them out after this time. A dozen or two of each well established will afford an ample supply of cuttings in the spring, propagated at which time they make much better plants than any struck during the autumn. Such subjects as Lobelias, and the beautiful dwarf lavender-coloured Ageratum, are often very disappointing when raised from seed, on account of their irregular growth, the latter especially showing a tendency to revert back to the original form. As both admit of such ready increase by cuttings in the spring, it is decidedly the most satisfactory way to propagate them, for which purpose the best and most distinct of each kind should now be selected. The somewhat delicate nature of the Ageratum renders it too tender to be wintered with the ordinary bedding subjects, and therefore any plants of it kept for stock should be accommodated with an intermediate temperature. The great heat and excessive dryness of the weather during July and August were anything but favourable to herbaceous plants, the growth and flowering of which have been sadly retarded and interfered with in consequence. The late rains have, however, had a most beneficial effect on the autumn-blooming varieties, such as the various kinds of Asters, Anemone japonica, Statices, Tritoma Uvaria, Rudbeckias, Helianthus, Asclepias tuberosa, Phygelia capensis, Sedum spectabile, all of which are now in great beauty. Most kinds of annuals will ere this have become too shabby to be allowed to remain, unless for the purpose of perfecting their seed, which is scarcely desirable on account of the cheap rate at which it can be purchased from those who grow it in quantities. The spaces from which the annuals are cleared should at once be filled up with such useful and showy early-blooming plants as Sweet Williams, Brompton Stocks, Wallflowers, Campanulas, and Pansies, which should now be sufficiently strong for that purpose. Before planting thoroughly break up the ground and work in a good dressing of mild decomposed manure, which will add much to the strength and vigour of the plants, and enable them to produce a fine head of bloom. Gladiolus should now be relieved of their seed-vessels by cutting away the flower-spikes as soon as the blooms become shabby, but in doing so every leaf should remain intact, as their preservation is of the utmost importance to assist in enlarging and maturing the balls. The thorough soaking the soil has now had after such a dry time will cause a rapid swelling in the budded portion of Briers, Manetti, and other Rose stocks, and it will therefore be necessary to examine the ligatures that they may be loosened or removed as circumstances require. It is the practice with many Rose growers to shorten back the shoot containing the bud as soon as they find it has taken, but as the effect of this is to start it into growth it is not to be commended. In most cases it is much better for the buds to remain dormant till the spring, as there is not sufficient time for any wood they may make to become firm enough to stand the winter, unless the buds were inserted unusually early. Give every attention to gravel walks, which, owing to the late rains, may now be got in a thoroughly solid, sound condition, by a frequent application of the roller. Should worms

become troublesome, as they generally are at this season after being confined so long below, a little salt scattered on the surface will soon rid the walks of their presence and give the gravel a clean, bright appearance.—J. Sheppard, *Woolverstone Park.*

Hardy Fruit.

Most kinds of Apples and Pears will soon be ready to gather, and the moment they seem ripe enough let it be done, as we may very shortly expect high winds, and ungathered ripe fruit will be either destroyed or fit for use only as wind-falls; on the other hand, none should be gathered until really fit to house. Pears, especially late kinds, if gathered too soon are rendered worthless, as they never ripen to be fit either for cooking or dessert, but shrivel and become hard and dry. A good criterion by which to decide whether a Pear is fit to gather or not is to gently raise the fruit, and if it part readily from the tree, it is ready to gather. Another plan is to cut open a fruit, and if the pips be brown, the crop may be gathered. The same rule applies to Apples, though none but the very late kinds suffer from early gathering to the same extent as Pears. After housing the fruit the room will require to be freely ventilated for a week or two until the fruit is dry and inured to the temperature of the house; sudden fluctuations more than anything else induce damp and decay. Fruit showing the slightest signs of decay should be instantly removed, for if left an atmosphere is thereby engendered inimical to the good keeping of the remainder. If space permit let the fruit be placed on the shelves in single layers; any extra labour involved in so placing it will be more than repaid by the dispatch with which it can be examined in order to detect bad fruit. Peaches and Nectarines, and also late Plums, should be gathered a day or two before they are fully ripe and placed in the fruit room. I cannot account for it, but such is the fact, that fruit so gathered is much more highly flavoured than when used direct from the trees. As soon as the latter are cleared of fruit, wash well any that are affected with red spider or mildew. Plenty of clear water applied with force for the former, and soap-suds for the latter, are two simple and effectual remedies. Raspberries may now have all their old fruiting canes removed and the new ones finally thinned out, in order that those for next season's fruiting may derive the fullest benefit from what sunshine we may yet be favoured with. After thinning let the ground about them be "pointed" (not dug deeply), then mulch thickly with well-decayed stable manure. The fruit-tree planting season is at hand, and preparation should, therefore, be made for new plantations, and for lifting, root-pruning, and renovating any trees requiring such operations. I consider October the best month of the whole year in which to plant fruit trees of all kinds—Grape Vines and Figs excepted, and these are best planted in the spring. The first requisite is, of course, suitable soil—a good loam; the next is effective drainage. On these two conditions, more than on anything else, hangs the future well-being of the tree. Any old trees that are on the wane may generally be improved by removing the top soil as deep down amongst the roots as is possible without cutting them too much, and filling in with fresh material—good sound loam only. A number of Pears thus treated some time ago now bear excellent crops of fruit. Peaches are especially benefited by such treatment, and the soil they prefer is a good hazel loam, with which has been incorporated a moderate proportion of wood-ashes and a sprinkling of crushed bones. Young trees of any kind that are growing too luxuriantly at the expense of fruiting should be entirely dug up, and the roots shortened back and replanted in the same soil. If the trees be too large to render it unsafe to adopt such measures, dig deeply round about one-half of them this year, cutting well under so as to reach the tap roots, and next year do the other half, filling in again with the same soil. No manure should ever be added to soil for fruit trees when newly planted, as, should it be necessary, it is best supplied in a liquid state when the trees are in active growth.—W. Wildsmith, *Heckfield.*

Hardiness of Aponogeton distachyon.—I have seen lately some correspondence in The Garden about the hardiness of this plant. It is perfectly hardy here. A moderate-sized plant from Mr. Parker, of Tooting, was planted in my pond in the spring of 1875. It flowered and seeded very freely, and in the autumn numerous seedlings came up in different parts of the pond. All of these appear to have lived through the winter, and one of them has now blossoms as large as those of the original plant. It will be necessary to prevent the seeds growing in future, or the plant will become a troublesome weed. The pond has rather a sunny aspect, but it was hard frozen last winter, and it has cold water running through it almost constantly. Some of the seedlings are in water not more than an inch deep.—F. Clowes, *Windermere.*

THE KITCHEN GARDEN.

FRENCH MODE OF GROWING ASPARAGUS.

I should be glad if you could tell me how the French Asparagus is grown that comes to Covent Garden Market? I hear it is about 12 in. long and three times as thick as our ordinary Asparagus, and blanched to within 3 in. of the top? Is this the kind which we grow in England? Is it or can it be grown in this country? If so, what plan of cultivation must we adopt? Is it as good for table purposes as our English Asparagus?—R. D.

[These questions we have submitted to M. Guiheneuf, who is well acquainted with such matters as practised in France, and the following is what he sends us on the subject.]

Imported Asparagus, as may be seen in early summer in Covent Garden, is cut as soon as the heads appear ½ in. above the ground, in order to keep the purplish colour of the top intact, which gives it so much more value, whilst English Asparagus is seldom used before it shows a green head 1 in., 2 in., or even 3 in. long, the flavour of which is, of course much more pronounced. If, however, French market gardeners left their Asparagus one or two days longer in the bed, they would have specimens similar in appearance and flavour to English Asparagus. The taste, however, of these long, green Asparagus heads is always bitterish, and not so refined as that of the purple ones, and if the edible portion increases at the top it decreases at the bottom. There is but one sort of Asparagus, of which all others are varieties. The common Green, White, German, Grayson's Giant, Giant Purple Dutch, Battersea, Gravesend, Early Argenteuil, Late Argenteuil, Reading Giant, Conover's Colossal, &c., may all be obtained from the same sort after a few years' careful cultivation. Miller says he tried comparatively seeds of the wild and cultivated Asparagus, but always found a noticeable difference between the two, but it is to be feared that he did not pay sufficient attention to the matter. The Giant Asparagus so much praised is simply the result of many years' careful selection, and it is certainly superior to the common sort. In fact, if both be planted in the same bed and treated alike, the former will produce heads much larger than those of the latter, but after eight or ten years the common sort will for the most part have obtained the perfection of the improved kind, though many plants will always produce inferior heads. The fact is that in all countries and at all times unusually large Asparagus have been produced. Evelyn tells us that in England in 1699 he saw sixty Asparagus heads which weighed 15¼ lb. Keysler says that in 1730 Asparagus heads produced at Darmstadt in Germany weighed ½ lb. each. Grayson produced 100 heads which weighed 42 lb., and as stated in The Garden (No. 238, p. 557), a bundle of Asparagus composed of 62 heads is said to have weighed 14 lb. 4 oz. Last year 100 Asparagus heads exhibited at Colchester Flower Show weighed 15 lb.; the same grower had another 100 that weighed 18 lb., and if all the fine specimens grown in private gardens round Paris were known to us we should have something still more marvellous. The length of Asparagus makes a difference in the weight, and ought to be noted. These examples show that Giant Asparagus can be obtained from any kind.

Propagation.

Asparagus is propagated either by means of seed or by division of the old clumps, the former being best: the latter is only used in the case of forced Asparagus. Many who raise Asparagus for sale, care little about quality, consequently they use what seed they may have, whatever may have been its origin, and sell the seedlings at one or two years old, a practice encouraged by buyers who would object to pay a reasonable price for superior stock. The following mode of raising Asparagus will be found to be in every way successful:—Select the best plants in a bed not under six years old, and do not cut any heads of it the season in which seed is to be saved; allow the finest heads only to run to seed, and when ripe, select only the largest berries, avoiding the top ones; wash the seed out of the pulp, have a bed trenched 1 ft. deep in light, rich, well-manured soil, and on this sow the seed in January or February 1 in. deep in drills 1 ft. apart, and cover the bed with 1 in. of leaf-mould; five or six weeks afterwards the seed will come

up, thin out the plants to 5 in. or 6 in. apart, and water them when necessary during the summer. The following spring these roots will be sufficiently strong to be transplanted permanently. Seeds are in some cases sown on the bed in which they are to remain; but that is not good practice, as it does not allow the seedlings to be selected and well cared for, and moreover the ground is in use one year earlier than it otherwise would be.

Asparagus grows best in a rich, sandy, fresh soil; if too calcareous or clayey, it does not answer. It also dislikes stagnant water, which must be drained off, and it requires more manure than most plants. It used at one time to be a luxury to have a bed of Asparagus, so expensive was it in the preparation. The bed used to be dug 5 ft. and 6 ft. deep; faggots of Broom or Furze were put at the bottom 1 ft. and 2 ft. thick; then the soil was replaced; after being mixed plentifully with manure, the roots were planted. The result was that such beds lasted from thirty to forty years in good condition, instead of ten or fifteen, as they now do. Every one has his own mode of planting. In France, the general practice is to trench the bed 2 ft. deep, removing entirely 1 ft. of the soil, and laying it in a ridge besids the bed. Plenty of manure is then added to the remaining soil; the roots are planted 2 in. deep and 1 ft. apart, in rows 1½ ft., as under; and every year a layer of manure, and 1 in. in depth, of the surrounding soil, are thrown on the bed, so that when the bed is made level the roots are still sufficiently deep. During the third season a few heads are cut. London market gardeners plant the roots 1 ft. or 1½ ft. apart, in rows 2 ft. or 2½ ft., as under. The beds, which are 3 ft. wide, consist of two rows, each bed being separated from the other by a foot-path or alley 2 ft. in width. Every year the soil of the foot-path is thrown over the bed, and in autumn immediately after the dry stems are cut down, the soil is again taken off the bed and thrown into the alley. Under this system Asparagus of a medium size can only be obtained; but now-a-days people want

Large Asparagus,

which may be secured as follows:—Select a piece of ground for the beds of good quality; trench it thoroughly 2 ft. deep, carefully removing stones, roots, and anything else which may be injurious to the roots; mix with the soil plenty of manure or compost, and let it lie until the spring. In February, should the weather be favourable, form the ground into ridges 4 ft. wide and 1 ft. high, and in March or April, according to the weather, make a trench between each ridge a few inches deep, and plant on little hills or elevations 3 ft. apart, cautiously spreading out the roots, and covering them with 1 in. of good compost; then add an inch of fine soil. A stick should be inserted to protect the roots and to which the small stems can be fastened when they require support. Keep the ground clear of weeds and destroy all slugs, snails, and Asparagus beetles; the latter lays its eggs on the stems, and when the larvæ are hatched, they destroy the young plants. Hoe the ground over as often as may be required, and water two or three times during the summer with liquid manure if needed; never intercrop with any other vegetable. In the autumn, when the stems have withered, cut them down to 1 in. or 2 in. in height, and remove the soil from the roots, leaving only about 1 in. or so of covering, and put a layer of old manure or compost from 3 in. to 5 in. in depth over the roots. Thus covered the roots will never get injured by frost.

Second Year.—In February or March fork up and level the bed, leaving the roots about 5 in. or 6 in. of covering, or make small hills 5 in. or 6 in. high over each plant. Make good any plants that may have failed, and cover the whole bed with a layer of rotten manure or compost 3 in. or 4 in. thick; this will keep the soil in good heart and in an equable state as to moisture, therefore no more watering will be required; destroy weeds and insects, and tie the stems to their sticks in order to prevent the wind from shaking the roots. In autumn cut down the dry stems to a few inches above the ground; again make up the ridges, leaving the roots 1 in. or 1½ in. deep, and over all put as much manure as you like.

Third Year.—In February level the ground as in the preceding spring, and remove what was left of the stems, over each plant put a little hill of soil, and sticks will be no longer wanted, as the stems will now be sufficiently strong to resist the wind without support. A few heads may this year be cut for use from each plant, but cutting must not be continued later than the 15th of June. Every year in autumn and in spring the same operations must be gone through, as in the preceding season.

Fourth Year.—All the heads may now be cut for use, but be careful to discontinue cutting on June 25; after that allow all the stems which appear to run up. The roots having now attained full development, must be kept during spring 10 in. deep, consequently the hill of soil over each plant must be made accordingly. The cutting time being over, the bed may be levelled if preferred; every autumn apply plenty of manure, and every spring mulch between the hills with fresh manure to prevent the soil from becoming hard. Salt dissolved in water and applied in spring will be found advantageous; but be careful about applying chemical manures, which often prove fatal to the plants. All seeds should be picked off as early as can be done; do not let them fall on the ground in autumn, otherwise a quantity of useless young plants will appear to the detriment of the bed.

The distances at which the plants stand apart may appear too great, but wide planting is the only secret as regards getting fine Asparagus; besides, the number of heads produced are double, and their size three or four times larger than they otherwise would be, thus showing a large balance in favour of plenty of room. The celebrated Argenteuil Asparagus, so largely imported to Covent Garden, is grown in a way similar to this. It is a practice in some provinces in France to plant Asparagus in vineyards between the lines of Vines. In this case the roots stand at 3 ft., 6 ft., and even 9 ft. apart, and though the ground may not receive any manure for twenty years, the produce is large and the quality excellent. Planting among Vines is chiefly done in Burgundy. Immense quantities of Asparagus have been planted in several parts of France and Germany for market purposes; they are for the most part cultivated with the plough, and supplied with chemical manure; the result is generally good. In order to ensure success, take up the plants from their seed-bed with every possible care; throw away every one cut or broken, and use only such roots as have a healthy appearance, and strong, well-developed buds; do not expose them to the air; on the contrary, put them into a basket in wet Moss immediately they are taken up, and keep them there until they are planted.

Cutting.

Asparagus should be cut when the heads just appear, or when they are 1 in. or 2 in. above ground, according to taste; once a day is sufficient, or twice for those who like them white and very tender. It requires some practice to be quick at cutting. The straight French Asparagus knife is the most convenient, inasmuch as it does not spoil the young shoots below ground, which cannot be seen. Holding the knife in the right hand, follow the Asparagus until the blade touches the root; then cut and pull up the Asparagus, which must be held with the left hand. Where the quantity cut is small, the heads may be carried away at once, but market gardeners leave them on the ground and collect them afterwards. Asparagus can be kept for a few days buried in sand in a cellar, but it is neither so well flavoured nor so tender as when used as soon as cut. As the different modes of bunching have been recently illustrated in The Garden, I need not now refer to them.

Forcing.

White Asparagus.—For this prepare the ground and plant as usual in beds 4 ft. wide, consisting of two rows 2 ft. apart, and plant the roots 15 in. asunder, leaving from 24 in. to 30 in. between each bed. The three first years cultivate them as previously directed, and the fourth season they will be ready for forcing, which can be done from November onwards. Asparagus ought to be forced only every other year; therefore, plantations must be divided into several parts and worked according to the wants of the household. At the end of October or early in November, the stems being cut down and removed, put on the frames; dig a trench from 1 ft. to 2 ft. deep between the beds, throwing the soil on to the bed, and put 1 in. of leaf-mould on the top; fill the trench with fer-

menting material up to the top of the frame as for a hot-bed, and cover with a wooden sash instead of a glass one; in case of frost protect with mats. The inside of the bed may also be filled with manure, which, however, must be removed as soon as the Asparagus makes its appearance, which will be from twenty or twenty-five days afterwards. Never give any air or light to the bed, and keep up the heat to about 60° Fahr.; keep up the heat until the plants are exhausted, then take off the frame in the spring and level the ground.

Green Asparagus.—This is generally very small, quite green, and grows on a hot-bed without earthing-up, its tops being cut and mixed with Green Peas. Young seedlings produce the best Green Asparagus, and in the neighbourhood of large cities immense quantities of roots are grown for that purpose. This mode of forcing is practised from October onwards to the spring. The bed being ready and the frames on, put 2 in. of mould or fine soil on the top, and cover with glass sashes. A distance of 1½ ft. is necessary between the bed and the lights. When the first heat is over and the bed reduced to 70° Fahr., plant the roots in a perpendicular position close to each other, with their tops all one height. In the case of old clumps, the roots must be shortened to a convenient length; insert some soil between them, and cover them with 1 in. of mould; put the frames on, and leave the bed alone until growth has commenced. Then admit plenty of air every day, if possible; keep the heat up, however, but not above the degree quoted. Cut the Asparagus as soon as it is sufficiently long until completely exhausted, when the roots may be thrown away. Owing to the dampness of the bed watering will be unnecessary. In case of sharp frost, cover with mats. Asparagus may be forced in this way, wherever there is heat in a hot-house, or in pits or frames heated by hot water; but the latter are too expensive for market gardeners, who have so much hot manure at their disposal.

Insects.

Snails and slugs are great enemies to Asparagus, especially in spring, by eating the young shoots if not sharply looked after. In dry summers they all come out after a shower, and may be easily destroyed by powdering the bed with quicklime—not one touched with it will escape. The Asparagus beetle (Crioceris asparagi) is also, as I have said, often troublesome in spring. It feeds upon the young Asparagus, destroying even the roots. The only remedy is hand-picking, or clearing it off by means of a brush and water, or shaking the plants and catching the beetles in a pan of water. After plantations reach the third year they are safe, as the Asparagus is not allowed to run up to seed before the end of June, when the beetles' career for the season will have ended. The cockchafer, so disastrous in France, is hardly known in England as far as Asparagus is concerned. It eats the roots of the plants, and in this way destroys large plantations, and yet no remedy can be found for it.

THE PARSNIP.

This, like several other of our most esteemed culinary vegetables, is a native of Britain; yet the cultivated form of the Parsnip of the present day is very different in appearance from the original plant when first taken in hand by the cultivator and moved from its swampy habitat. Like many others, it is an evidence of what can be accomplished by attentively studying the nature and requirements of plants, and by a careful selection of individual examples that show some superiority in their form, size, and vigorous constitution. From the fact of its being indigenous to this country it will at once be apparent that, unlike many of the occupants of our kitchen gardens, it requires no coddling treatment, yet nevertheless it will well repay the labour expended in attention and good cultivation. It is not very particular as to soil, but does not like the two extremes—of land that is either over-light and sandy on the one hand, or too heavy and adhesive on the other. The form of the root, penetrating as it does for a considerable distance straight down, at once shows the necessity for a sufficient depth of soil to admit of its extending; consequently the ground should be well and deeply dug, so as to readily allow its descent whilst the root is young and delicate. The soil should be moderately rich for Parsnips to grow to a large size, in which condition they are quite different both in flavour and texture from the stunted, starved productions resulting from poor hungry land and negligent cultivation. But although the Parsnip likes to be well nourished, it is not advisable to grow it in land that has immediately before received a heavy dressing of manure, as so treated the roots are liable to be cankered or affected with grub. It is best to grow it after some other crop that has been well manured, such as Onions, Cauliflowers, or Lettuce, trenching or deeply digging the ground over in the autumn, and leaving it as rough as possible on the surface. Should the soil not be suitable for the crop on account of its poverty, some manure ought to be dug in this autumn, which will be much better than adding it at the time of sowing; mix it regularly with the soil as the work proceeds. About the middle or latter end of March, according as the locality may be early or late, as soon as the land is sufficiently dry, let it be well forked, reducing all the hard lumps that exist, not merely making it smooth on the surface, but quite as deep as the fork or spade goes. This is necessary for most plants, but particularly so for Parsnips, Carrots, Beet, &c., or the roots are liable to grow forked. With this, as with all other spring-sown crops, never be guided by a certain date, even to a week, in the time of sowing, if the state of the land be such as not to favour the sowing of the seed; it is always better to wait than sow when the soil is too wet, the effect of which is that it does not germinate freely, and the land gets compressed and never works kindly through the whole season. Sow in drills 1 in. deep, and from 15 in. to 18 in. apart, according to the more or less rich condition of the land. All that is afterwards required is timely thinning, leaving the plants 10 in. or 12 in. apart in the rows, and the careful destruction of weeds by frequent hoeings throughout the season. On the score of being handy to get at, many take up the roots towards the end of October and store them in sand or ashes, but they are vastly superior if left in the ground. In this way they are not liable to get spongy or strong flavoured, which they sometimes do when stored under cover. So far as regards varieties, the Hollow-crowned kind is a good one, and so is a newer sort, The Student, by some considered superior in flavour. There is no harm in trying both. Some soils will favour one kind a little more than the other.

T. Baines.

Porter's Excelsior Potato.—On the 15th of August last I lifted a crop of this Potato, the produce of 1 lb. of seed cut up into small sets, each having one or two eyes. The weight was 28½ lb. of good-sized eating Potatoes. A few were of large size; small chats picked out, 3 lb.; total, 31½ lb.; diseased tubers, about 1 lb. At one root I counted twenty-four tubers, all of which were large enough for eating or planting. If the weather had not been so dry, the crop would have been heavier. I have tasted them both boiled and steamed, and the quality is both mealy and good. It is a variety suitable for small gardens. The haulm grows from 16 in. to 18 in. high. It can therefore be grown in rows 2 ft. apart, and the sets about 12 in. to 14 in. asunder. It is a second early, and ready for lifting early in August; the tubers are handsome in shape, roundish and flattened, eyes small. I used a very small quantity of manure, and a sprinkling of Amies' fertilizer. Last year this Potato took the premier prize at the Alexandra Palace Exhibition. Its skin is netted, which is a sure sign of mealiness. If it remain tolerably free from disease, it is well worth growing.—Henry Taylor.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

French Beans.—An extra sowing of good, dwarf, forcing French Beans should be made at once in pits, or in fair-sized pots set in the open air to be eventually removed under glass. Good vegetables, owing to the drought, are likely to be scarce for some time to come, and provision must therefore be made to fill up the gaps.—J. Groom.

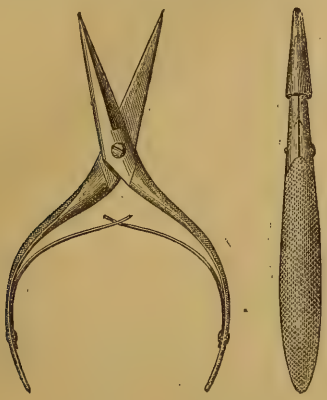
Rollisson's Telegraph Cucumber.—As a general cropper there is no variety of Cucumber surpasses this. It bears freely at all times, and the produce is always well formed, generally about 2 ft. in length, and the flavour is rarely deficient. As many will now be thinking of sowing seed for winter plants, let me recommend them to put their main dependence on this variety.—A. B. Y.

Predome French Bean.—This variety, which is extensively grown in Jersey and Guernsey, Mr. McIntosh informs us, succeeds well with him at Oatlands Park, and is a most useful and prolific kind. It evidently belongs to the Mangetout type, as it does not require cutting, but can be readily snapped up into any sized pieces that may be required. Another advantage possessed by this variety is that it is very tender, even when the Beans attain their full size.—B.

Paris White Cos Lettuce.—There are many different kinds of Lettuce now in cultivation, but I much doubt whether any of them will surpass the true "strain" of the Paris White Cos for general summer use. I happened to transplant some just before the first hot weather set in; they were never watered, neither were they mulched, and hardly a drop of rain fell on them during the whole period of growth, but not one of them showed signs of "bolting," and in point of crispness and general excellence they left nothing to be desired. This is perhaps as severe a trial as a Lettuce could well be subjected to, the weather during the whole time having been extremely hot.—J. Cornhill, *Byfleet.*

GRAPE SCISSORS.

The Grape Scissors, a sketch of which is here given, are those often used on the Continent. They are firmer, and at the same time lighter than those generally met with in this country. As will be seen, they are slightly convex, which facilitates holding them, as they are handled in the same way as pruning shears. The spring ought to be so regulated as not to open the blades more than is necessary to catch the foot-stalk of the Grape, thus facilitating the introduction of the



points into the centre of the bunch. A small leather case which any one can make, placed over the points when closed, enables them to be carried in the pocket without danger. M. L.

GARDENING IN THE MIDST OF HOUSE BUILDING.

Let us confine ourselves to town and city gardens, and more particularly to London gardens, for there are multitudes of gardens even in the smoke of London town, though we may see but so little of them. Maps of London do not throw much light on London gardens; they indicate the squares and parks, but do not show where the small plots of Grass, gravelled paths, and plots of flowers, are to be met with, even when they face the public road and border the pavement, still less when those are to be found at the backs of so many London dwellings, and on which sometimes a great deal of money is yearly spent. But yet are London gardens worth a map mark and a glance, and we may, perhaps, wonder that a good deal more is not done with them in a vast variety of ways; and the closer the subject is looked into the greater the wonder will appear. We here confine our remarks to the gardens in London, and as surrounded by bricks and mortar, and do not touch on the surrounding ring of market gardens and green fields; for even London, huge as it is, has its limits, and you come to the green fields and hedgerows at last. We need but touch on the parks which have, fortunately for Londoners, been set aside and preserved from the powerful hands of the house-builder. A coloured map of London would show but very little of green shading were it not for these, and large spaces north and south show nothing but ever-increasing masses of dull brick houses and waste plots for more and more of them—gardens and squares certainly not forming items in the minds of those who lay out these extensions of great London city. A walk through, and up and down, one or more of these new, and long, and quite straight streets of evenly-built little rows of small houses is about as dismal a one as can well be imagined; bald "utility" can no farther go. Yet at the backs of these small "useful" houses there are, as often as not, little plots of ground called gardens in all stages of desolation and weedy waste, and with, as often as not, the ground trodden down into hard lumps, and all vestige of Grass and plants, or even weeds of any kind, utterly gone; market gardens, be it noted, formerly occupying the ground on which these houses stand. Thus we have yet in brick-and-mortar London three, at least, distinct kinds of garden ground, to wit, the parks—and there ought to be yet more of them—the "squares," and the plots of garden ground scattered about by accident here and everywhere, though for the most part hidden away behind the houses to which they severally belong. To these we may perhaps add, for it is difficult to duly classify them, such plots of Grass and tree covered ground as the grounds of Chelsea Hospital, the Artillery ground, and one or two others. So that London has its green spots.

It is in the older and less-improved parts of London that these little garden plots are most to be found and best seen; indeed, it may be said that our grandfathers seem to have thought a little bit of a garden, even in front or in the rear of even the smallest house, a necessity, and a thing of course. In out-of-the-way localities, now thrust into the background, you may go down little narrow courts, with really pleasant bits of green-covered spots—small enough, certainly, but a pleasant relief when contrasted with the long, dull length of a street of to-day's build, consisting of houses of the same kind, and intended for the like sort of tenants. We could catalogue many such not yet improved out of existence; but few would care to look for them in such out-of-the-way spots.

We may, however, remind the reader that in the New Road, as it used to be called, the Marylebone Road that is, the Euston Road, and the City Road, garden ground is yet to be seen, and here and there some goodly trees thrive. We may note, too, in passing, that Charles Dickens lived in a pleasant house in this road for some years, and it may interest a mortal here and there to know that he never suffered the sunblinds at night to be drawn down, so that you could in passing always see into his pleasant-lighted rooms. A better place in London town he could hardly have found. The house had and has trees in front of it, but yet not enough to hide it. Improved house-building in all ways is the order of the day; but a good deal has yet to be done, and perhaps first said, before in a quiet way better Englishman's house-building than such as this is likely to come about, and green spots and trees ought surely to form an item in the problem. But the green trees just now are in such fine state of luxuriousness and plenty that before they take their autumnal tint of yellow and begin to fade, it is well to note how even a single green and full-leaved tree tells in a dull and quiet brick-built street, and how curiously some of them have been allowed to retain their places and grow to huge dimensions sometimes, and where they might be least expected. Cheapside is right full enough of shops and trade, and small room would there seem to be for tree growth, but, as all know, there is one, and a fine tree, too, in the very midst of it. Cheapside is one of the picturesque streets of London, and this tree growth in its midst most certainly helps it, and adds to its pictorial effect, as much so as does the fine spire of Bow Church itself. It is, without doubt, one of the advantages of an old nucleus to a new city that such spots as these exist in it. The dead uniformity of a cut and dried plan is thus broken up, and the good fortune in this instance is that a green tree does it. Many others, but in more out-of-the-way spots, might be named where this memorial of the past of things breaks the modern uniformity of to-day's work. Islington, Clerkenwell, and Chelsea, have still many of such, though they are fast disappearing as new buildings take the places of the old. In and about the Inns of Court, too, goodly trees are to be met with where you might never go to look for them, and many a dull, narrow way is cheered by a tree-top looking over a dead wall; how long will even these last.

We would, by way of another glance at a really important subject, hint at an "improvement" or two that might be made in one or two localities where expense certainly would not stand in the way. Shop-filled streets are not the places for trees, that is certain; but such broad ways as Portland Place—the street of streets at one time, and before Belgravia and Tyburnia rose into note—would seem to be specially adapted for them for quick-growing, luxuriantly-leaved trees. The carriage-way is here broad, and but sparsely occupied, and the pavement wide, and is in a direct line with the broad walk through the Regent's Park. It would seem a pity that a like walk does not run through Park Square at the top of it, thus to form a pleasant, and indeed in London town, unique vista. But be this how it may, trees on either side of this aristocratic way would help to "improve" the baldness of its plain brickwork. Trafalgar Square, too, surely would be improved by the addition of a few trees. The asphalte which now covers it looks cold and bare and cheerless enough, and any sort of ground covering would seem to be better, and what better than a Grass-covered space, with fountains to help it and complete it. How much there is to be done in great London city!—not indeed by the expenditure of vast sums of money, but in a quiet way, every here and there, and sometimes, indeed, without any money cost at all, by the simple process of saving it, and leaving things alone, and at least by allowing the very earth itself to do its kindly work.—"Builder."

A Soldier Weeder.—According to an old soldier's (Mr. Clarke, now of Thetford, but once serving with the 28th Regiment in St. Helena) story given in the "Times" the other day, the great Napoleon had a leaning towards rural economy which one would hardly have expected. He would carry a stick about as thick as a walking-stick, with an iron spud at the end, and, anywhere where he went, if he saw a weed, he would always spud it up.

GARDEN RECEIPTS.

Liquid Manures.

Liquid manures as a rule, especially among amateurs, do not receive the attention they deserve. All experience leads to the conclusion, that manure, of whatever description, is the quickest in its action when applied in a liquid state, consequently, when any crop gives evidence of an insufficiency of support, there is nothing so effectual as liquid manure; this particularly applies to kitchen-garden crops, where the necessary application is practicable. In fact, there are some vegetables that, in their more advanced stages of growth, can only be brought to perfection by the use of liquid manure judiciously applied. The French summer salads that are held in equal estimation with those they produce in winter, owe their excellence largely to the rich liquid with which they are unstintingly supplied. Lettuces, Radishes, and even Mustard and Cress, that are grown quickly by the use of liquid manure, are as different as can well be imagined from the tough, flavourless, indigestible material of which an English salad is too often composed. The comparatively large plants in the smallest of pots, unsurpassed in their way, which the growers for Covent Garden Market turn out, are striking examples of what may be accomplished by means of liquid manure alone. Liquid manure is also used with excellent effect for Pine-apples, Cucumbers, fruit trees of all kinds in pots, in short, for all plants in pots that require stimulating.

Gas Liquor.—The ammoniacal liquor obtained from gas-works may be used with excellent results in places where its peculiar odour does not render it objectionable. It consists of a solution of ammoniacal salts which constitute its principal value, and a number of other compounds which, if they do no good do little harm. It is very caustic, and must be diluted with at least six times its bulk of plain water. Even then it must be applied cautiously to delicate plants, otherwise they will become burnt up. If much of it be used, sulphuric acid (oil of vitriol) should be added, in the proportion of a quarter of a pound to every gallon, to fix the ammonia. The diluted solution forms an excellent manure for Grass, to which it may be applied in the proportion of 100 to 200 gallons per acre.

Guano.—Dissolve 50 lb. weight in 10 gallons of water, and of this strong solution add ¼ pint to every 10 gallons of water.

Mineral Liquid Manure.—A solution of sulphate of ammonia, a quarter of an ounce to the gallon, is much recommended. M. J. Jeannel, an eminent French agricultural chemist, recommends the following formula, but it does not seem to have worked so successfully in other people's hands as in his own. The manure consists of the following:—

Nitrate of ammonia	400 parts.
Nitrate of potassa	250 ,,
Biphosphate of ammonia	200 ,,
Chloride of ammonium	50 ,,
Sulphate of lime (gypsum)	60 ,,
Sulphate of iron	40 ,,
	1000

The salts should be pulverised separately, and then intimately mixed. This manure is applied in the following manner:—Dissolve 62 grains in a litre (1¾ pint) of water; give to the plants, according to their state of development, every week from 387½ to 975 grains of this solution (equal to from 1½ to 9 grains of the salt in solid state).

Solution of Cow Manure.—One part by weight of cow manure mixed with four parts of tepid water, of which 1 pint weighs 1¼ lbs., forms an excellent liquid for watering Vines, Peaches, standard Apple and other fruit trees, and for strong-growing vegetables such as Cucumbers, Celery, Cabbage, &c.

Solution of Sheep-Droppings.—The proportions in this case are 1 peck of fresh manure to 30 gallons of water. The mixture should be well stirred, but allowed to settle before using.

Solution of Soot.—A liquid manure formed by adding 6 quarts of soot to a hogshead of water, is very serviceable for watering stove plants, Pines, Vines, forced plants generally, as well as most bulbs and flowering plants and shrubs.

Mildew on Grapes.

This is certainly one of the most troublesome and destructive diseases with which the Grape grower has to contend, inasmuch, as if once established, the crop, however fine, is doomed to destruction, for, although mildew may in a great measure be prevented, it cannot be cured. It generally appears first on the young foliage in the form of small white specks, but may frequently be seen on the young berries, when it has not been discernible on the foliage. Vines that are in bad condition are more liable to its attacks than those in a sound and healthy state; therefore, if we would effectually ward off mildew we must have healthy Vines. Some varieties of Grapes are much more susceptible than others, and it often happens in mixed houses that one or more varieties may be affected by it, whilst others growing close by the side of them may be entirely free. Mildew on Grapes is most prevalent in cold, damp, sunless seasons, when air cannot be freely admitted especially so in Vineries that are unheated and kept in a moist condition, for mildew being a fungus, delights in a cool, moist atmosphere, and under such circumstances the rapidity with which it spreads is alarming, therefore in all Vineries there should be some means of keeping a warm, dry atmosphere during cold, damp weather. Mildew has been attributed to numerous causes, such as stagnant atmosphere, unhealthy root-action, insufficient ventilation, sudden checks, dryness at the roots, &c. And although we admit these are all more or less favourable to the rapid progress of the disease after it has once made its appearance, yet the direct cause has never yet been plainly pointed out, and we very much question if it be possible. It frequently happens that Grapes that have been subjected to the best known modes of treatment are affected with mildew. Supposing that every precaution has been taken with regard to watering, ventilating, heating, &c., in what direction are we to look for the cause? That it is most prevalent during cold, cloudy weather most people are pretty well agreed. May not, then, the principal cause be sudden draughts of cold air upon the tender tissues of the berries and foliage produced by the sudden opening of doors, &c.? It has frequently been noticed in ranges of Vineries that those houses most affected by mildew were those communicating with the open air, whilst those that were accessible by other means were not affected in the least. Lady Downe's Seedling, Black Alicante, and Black Hamburgh are varieties much more liable to mildew than many others, especially those of the Muscat type. The only effectual preventive for the spreading of mildew is sulphur, and it may be either mixed with water and applied in a liquid to the Vines by means of a syringe, or mixed with milk to the consistency of paint, and applied to the hot-water pipes or flues with a brush. The latter is most effectual if the pipes be made hot and the house kept close, but it is more dangerous than the former, as if slightly over-heated rust is the result, therefore it should never be used in this way by the inexperienced. In whatever way it may be applied it should be done directly the disease is discovered in order to arrest its progress, as the vitality of the skin of the berry once lost can never be restored; prevention, then, is the principal thing to be aimed at. Berries that are affected by mildew are useless, as the skin becomes contracted and causes them to become unshapely, and they never ripen properly; they should therefore be removed as soon as possible to prevent the further progress of the disease. Vines that have been much affected by mildew when pruned should be well dressed with sulphur, soft soap, and soot, adding a little clay to thicken it. This being done will diminish the chances of its returning the following season.

Mr. J. Simpson, while admitting that "Mildew is one of the worst diseases that affect the Vine, states that fortunately it does not very often attack Vines grown under glass in this country, and adds that good culture and attention will generally ward it off, but that when once established upon the plants, it is most destructive in its effects. It is generally the result of unhealthy root-action, a too low temperature when the Vines are in full growth (thereby predisposing them to the disease), a stagnant atmosphere, insufficient ventilation, or, in fact, anything which lowers the vitality of the Vine when it is growing. Intelligent treatment therefore is the best preventive.

The disease should always be watched for, however, as preventive measures, when it does occur, are only successful when taken early. It first makes its appearance upon the surface of the leaves, in the form of small, white, dusty-looking specks, just indicating that the parasite has taken hold; but it will often spread over a whole house of Vines before its presence is noticed or even suspected, and if not checked it runs over the leaves with marvellous rapidity, killing the tissue wherever it establishes itself; eventually it reaches the berries, covering them as with a white hoar, destroying their skin as it does the tissue of the leaves, and utterly spoiling the crop and seriously injuring the health of the Vines. It can only be checked when it does appear by timely action, and sulphur is the only remedy. The sulphur should first be mixed with a small quantity of milk until it is thoroughly disintegrated, then poured into a pitcher of water, and applied to the Vine with a syringe until every leaf is wetted. This will seldom fail to destroy the parasite, though it may have to be applied more than once. In winter the Vines should be washed, and afterwards painted with sulphur and milk."

Mildew on Roses.

One of the most prevalent diseases to which the Rose is subject is mildew, which is often very destructive to young Roses in the seedling state. It also attacks plants when fully grown, particularly in dry soils and during dry seasons. The best way of preventing it is to cut away all weak shoots and those that have already flowered, taking care of those that are strong and not likely to make laterals in the autumn. If this be impracticable, the mildew should be immediately washed off with a sponge dipped in a mixture made with 3 oz. or 4 oz. of soft soap to a gallon of water. This is quite as effectual as sulphur, and leaves no marks. The soft soap should always be dissolved in cold water.

—— Syringing towards evening and then dusting with flowers of sulphur is also recommended. Where this is objectionable on the score of appearance, sulphur may be applied in the dry state during the day while the leaves are dry. Watering with a solution of nitre is also said to destroy mildew. In open and well-exposed situations the disease seldom occurs, but in pent-up and shady places it is almost certain to make its appearance, and will spread like wildfire if not daily looked after.

Millipedes.

The horticulturist must regard Centipedes as friends, but not so the Snake Millipedes or Juli. These are general feeders, consuming both living and dead, and decaying animal and vegetable substances. The living animal matter on which they prey is slugs, small snails, earth-worms, insects, and their larvæ and pupæ, and so far as that goes they may be regarded as friendly to the cultivator; but, on the other hand, they also feed on living plants, and many of them, such as Potatoes, Carrots, &c., are often seriously injured by their attacks on the roots. A sound healthy tuber has perhaps too tough a coat for them to penetrate, but when they get into the juicy interior of soft pulpy roots, such as bulbs, the case is different; they can have no difficulty in making their way into them or in consuming the tender fibres of the roots of herbaceous plants. It is very doubtful whether any means have been found of getting rid of these pests. Sprinkling soot and nitrate of soda over the land, and watering it with lime-water, have been recommended, but apparently without much success. It is difficult to damage the insect without damaging the plant attacked. So far as greenhouses, hothouses, and outhouses are concerned, they may be kept tolerably free from them by care and cleanliness; but the open fields are less under control. The commonest species are the Julus terrestris, a leaden-coloured kind, something like a thickish wire, and Julus guttatus, a small, long, thread-like species, too minute and slender to allow anything to be done by direct manipulation. When viewed under a magnifying glass this last species will be seen to be a very pretty little animal, like a pale thread about the thickness of a pin, with a double row of bright crimson spots upon it, and when put in spirits it stains the liquid of a purple hue, to which it itself turns after death. It has no eyes, which has led to its being regarded as belonging to another genus. This is the species which most frequently forces itself upon the attention of horticulturists, and Lilies seem especially the objects of its attacks. Curtis, from his own knowledge, specifies the roots of the Scarlet Runner, the roots of the Cabbage tribe generally, and the roots of young Wheat, as having been attacked; and Mr. Wilson Saunders notes that he had observed that the young roots of his Heart's-ease were injured by this species. There are several other British species of Julus, viz., J. Londinensis, J. latestriatus, J. punctatus, and J. pilosus, and with them should be reckoned the little flat Polydesmus complanatus, which seems to be not far behind J. guttatus in its mischievous propensities. Millipedes are often popularly, but very erroneously, called Wireworms. The Wireworm is the larva of one of the Elateridæ or Skipjack Beetles; the Millipede is not an insect at all, insects proper only having six legs.

Mole Crickets.

These pests, which are much greater enemies to the cultivator in France than in this country, are probably often the cause of much damage to many subjects without the destroyer being suspected. M. Souchet has several fields planted with Gladioli, and the moment a trace of the Mole Cricket is seen, a workman follows up the run with his finger till the spot where it rests is arived at, and then the hole is made wide at top, and immediately afterwards filled with water to the brim. On the top of the water they then pour a little oil, which gradually descends with the water, and closing up the breathing tubes of the mischievous little brute, it begins to perish of asphyxia, and generally comes out and dies on the surface of the earth. M. Souchet is so impressed with the necessity of destroying this pest that even his unoccupied land is rolled quite flat, so that the tracks of the insect may be seen at a glance, which could not so readily be discovered in rough cloddy soil; and when its presence is shown by decayed plants in the thickly planted beds of Gladioli, and its run cannot be traced, the ground is trodden quite firm and smooth between the rows, so that its little pathway can be readily seen. Two jars (one full of water and the other of oil) are always kept at hand. Of course the insect may be dug out if the land be unoccupied, but the water and few drops of oil on its surface is the quickest and surest plan of destruction, and, in planted beds, the only practicable one. M. Boutard Ruel, of Mer, destroys them by means of soapy water poured into their holes. To prepare the solution, boil, during a quarter of an hour, 18 oz. of common soap in 30 quarts of water.

Mortar for Garden Walls.

To obtain good mortar, as much depends on the character of the ingredients and the manner of mixing them as on the goodness of the lime itself; it does not necessarily follow that because the lime is good the quality of the mortar will be good also. The best lime ever burnt would be spoilt by the custom, common among builders, of mixing with it alluvial soil and rubbish taken from the foundation pits of intended buildings. The sand should be hard, sharp, gritty, and not too fine; it should be perfectly free from all organic matter, and with no particular smell. Good sand for mortar may be rubbed between the hands without soiling them. The water should be free from organic matter, and should never be taken from stagnant ponds. Bits of stick, straw, or other vegetable matter will cause the mortar to "blow out" in small flakes after it has set. Salt in either the sand or the water appears to have but little effect on the ultimate strength of mortar, but it causes the work to saltpetre as it is termed, white feathery crystalline spots appearing on the face of the structure. It need hardly be mentioned that mortar made with salt or sea-water remains damp for a very long period. The object of the sand is to increase the resistance of the mortar to crushing, to lessen the amount of shrinking, and to reduce the bulk of the more costly material—lime. Water is the agent by which the combination is effected, and no more of it should be used than is absolutely necessary to fill the insertions between the grains of sand, and render the whole into a paste sufficiently thin to be easily spread on a flat surface without running over or squeezing out under the weight of the superincumbent brickwork. For heavy rubble-work take 1 part of slaked lime, 2 parts of sand, and $\frac{1}{3}$ part of smithy ashes: for brickwork, 1 part of lime, 1 of sand, and 1 of smithy ashes.

Moss.

On Fruit Trees.—This is generally an indication of approaching decrepitude, removable in the case of young trees, whose growth may be improved under more liberal treatment, but not so on old ones, upon which, however, the Moss does but little harm, except indeed in the way of barbouring insects. Various remedies have been suggested, such as carbolic acid and chamber lye, a solution of ½ lb. of common salt or washing soda in 1 gallon of water, and milk of lime laid on with a brush. The true remedy, however, appears to lie in thoroughly draining and enriching the ground in the neighbourhood of the trees so as to induce a more healthy growth.

On Walks and Lawns.—This generally arises from the ground not being properly drained, for Moss never grows on lawns that are drained sufficiently. The surface soil should be enriched with a dressing of soot, wood-ashes, nitrate of soda, or even lime; the turf itself should be improved either by relaying the parts that are most mossy, or by sowing down with good seed. As a beginning it is well to try a sprinkling of fresh lime on the first dry day in March, and about the end of the month spread on the lawn a thin film of guano, nitrate of soda, or some other fertilizer. For large lawns the following treatment has been successfully adopted:—In early spring, while the ground is wet or soft, rake it with a long, sharp-toothed rake, working it well backwards and forwards in order to bring the Moss to the surface and disturb the remainder considerably. Clear away the Moss so brought up, and leave the ground untouched for a fortnight. Early in March repeat the operation; and about the middle of that month apply a dressing of rich compost, which may consist of any old rubbish well decomposed, adding one-sixth of fresh lime. Mix the lime with the compost a few days prior to spreading it over the ground. Cover it with the compost. Spread this on the ground at the rate of 200 barrow-loads per acre, passing it through a ¾-in. sieve, to save the trouble of stone-picking. Rake it evenly over the surface with a wooden rake, and, when dry, sow Festuca ovina, 6 lb.; Festuca duriuscula, 3 lb., or 6 lb. if the Grass is to be mown with a machine; Cynosurus cristatus, 6 lb., and Trifolium repens and T. minus, 3 lb. each, omitting the last if the ground be of a wet nature. If the situation be shaded by trees, sow 3 lb. of Poa nemoralis instead of Festuca ovina. The above quantities are sufficient to renovate an acre. After sowing, the ground may be lightly raked and then well rolled, and twice weekly. In the month of May a dressing with soot in damp weather would do much towards ridding the lawn of the Moss. The cause is a poor soil and damp bottom; the remedy, an improved state of the soil and more herbage. Wood-ashes are good, also salt; but it takes nearly as much salt to kill Moss as it does to destroy Grass. By proceeding as above recommended you will not be able to use the ground so early, but you will be well satisfied with the improvement in the appearance of the lawn. For walks the following remedies are recommended:—Mix in a 3-gallon watering-can 20 pints of water and 1 lb. of oil of vitriol; stir it well, and water the middle of the walks, so that 12 yards may be covered by it. If the edging be approached, it should only be by what runs from the walks. The best way to use it economically is to water from the centre to the side literally along the walk. In two or three days Moss and Grass will have disappeared. This and the following remedy are, of course, inapplicable to lawns. An old watering pot should be used, and should be well washed out immediately after, otherwise the vitriol will act on the metal and produce holes in the can. Salt may be also used, care being taken to prevent its spreading so as to injure the turf. A good plan to prevent its being washed to the sides of the walk is to place a small ridge of sand along either side, about 6 in. from the edging, for a few days until the danger is past. The salt may be applied in a dry state, or with boiling water, which is the quickest. Whatever you apply to kill the weeds is liable to be washed by the rain to the sides, and so may destroy the turf. Hand-picking is therefore safest.

Mushroom Spawn.

Mushroom spawn should if possible be made early in the spring, as by so doing a sufficient quantity of cow manure—which is the principal ingredient employed—can be collected together from the cow-sheds before the cows have any green food, as the manure is much stiffer and answers the purpose better than when Grass is their principal food. This should be laid in an open shed to dry, and moved every few days to prevent it heating; to this should be added in equal proportions fresh horse-droppings, a little loam, and some chopped hay or straw. The whole should be well worked together and then trodden down, after which it may be allowed to remain for a few days, when it will require to be turned two or three times a week. If the weather be fine and dry the mass will soon be in a fit condition for moulding into bricks, which process can be performed by using a mould in the same way as the brickmakers, or it may be done in a more simple manner, viz., the manure should be spread to a thickness of 6 in. and then be firmly trodden and beaten down evenly with the back of the spade. It should then be lined out to the required size of the bricks, and be cut with a sharp spade or turfing iron. In a few days the bricks will be sufficiently dry to handle, when they should be set up edgeways to dry thoroughly, and if exposed to the sun for two or three days they will be ready to receive the spawn. In introducing the spawn, two holes should be cut in each brick at equal distances, the holes should be of such size as to admit a piece of spawn as large as a pigeon's egg. This should be well beaten in and the surface made even with a little manure. When the process of spawning is completed, the bricks should be collected together in a heap and covered with enough short manure to cause a gentle heat, being careful that there is no rank heat or steam to kill the spawn. This must be carefully attended to until such time as the spawn is found to have penetrated through the whole of the bricks, after which they should be staked away in any convenient dry place. The spawn in the first place is generally procured from nurserymen, but it can be gathered from meadows where there are cattle tracks: it may easily be discovered by breaking up some of the soil, having the appearance of a white mould and smelling exactly like Mushrooms. This will retain its vegetative powers for years, providing it be kept dry. It is advisable at times to procure a change of spawn, as this, like most other vegetables, gets worn out in time.

A well-known Mushroom grower gives a somewhat different receipt:—"Six barrow-loads of cow manure, two barrow-loads of horse-droppings, and one of loam, are mixed and beaten well together. This may be done on the floor of an open shed, and when firm the mass may be made into cakes 8 in. square; these should be placed on edge to dry in an airy shed, and should be frequently turned. Of course the bricks must be protected from rain. When half dry make a hole 2 in. square in the side of each brick, and place in it some good old spawn, inserting it so deep as to be a little below the surface. Cover up the hole with a little of the compost of which the bricks are made. When the bricks are nearly dry place them on end in a dry shed, piling them one on the other with spaces between them. Cover them over with hot manure, keeping it on for three weeks or a month; the temperature should not, however, exceed 60° or 65° Fahr. If the manure show signs of heating the bricks too much, the covering must be reduced so as to reduce the temperature. The spawn will soon begin to run through the bricks, and when it appears at the surface in the form of a white mould, they should be removed and allowed to finish drying in order to arrest its growth till it is required for use." C. W. Quin.

Herbaceous Phloxes.—These are just at the present time among the most beautiful of all bright-coloured hardy flowers on warm, rich soils, and they, moreover, have the advantage of not being injured by heavy rains. Messrs. Downie & Laird, of the Park Hill Nurseries, Corstorphine, near Edinburgh, have sent us a splendid box of cut spikes, among which the following new varieties are deserving of notice:—Mr. David Croall, a bright purplish-lilac flower, very round and smooth, having a crimson zone of colour around a white eye; Earl of Mar, a splendid variety, of a brilliant crimson colour flushed with scarlet when seen in a good light—it is one of the richest coloured Phloxes we have yet seen, and well deserves culture; John Anderson, a rosy-lilac kind with a velvety crimson eye, very good form, with large, smooth flowers; Miss F. Hope, a white variety with a bright lilac eye, and very pleasing when contrasted with dark kinds.—B.

THE ENGLISH LIME IN AMERICA.

In a late number (p. 151) this tree is spoken of as the least suitable of all trees for towns, and in corroboration of this remark it is asserted that "in many of the London parks the ground is covered with fallen Lime-tree leaves." We have a row of English Limes bordering our grounds a quarter of a mile long, alternating with Scotch Elms. In 1874 a cool, rather wet summer, with 3 in. of rain in twelve hours on the 8th of August, brought the leaves nearly all off the trees, and where not off they were literally blasted, being covered with aphis and honeydew, and perfectly black. Camellias standing under some of these trees had their leaves coated with a substance like greasy lampblack (the exudation of insects), which could only be removed by washing every leaf. This year we have had the hottest and driest summer which we have experienced for a long period; the thermometer from the middle of May to the end of July at sunrise has never indicated less than 65°, and generally from 70° to 74°, and now it is never under 85°, and most of the time from 90° to 100°, with only three light thunder-showers, yet the same Lime trees are at present (August 25) as green and beautiful as the Scotch Elms or Maples are. This, of course, does not make the Lime the most desirable tree for towns. But the question is, Is it the drought which causes the leaves to drop off? My own opinion is, that the aphides attack them in some seasons under certain conditions, and that from this cause alone the leaves fall. The American Lime (Tilia americana) is not liable to be thus affected, and certainly at this very date there cannot be a more leafy, deep green, and shady canopy over one's head than this tree, its leaves measuring 11 in. long and 9 in. broad, and with the loose, irregular, half-pendent, and long swaying branches, so entirely unlike the stiff, lumpy-headed, European tree; still the latter has many admirers, because it is so symmetrical and compact. One street in Boston, half-a-mile long, has a row on either side, and, except when they are attacked and lose their leaves, they have a very handsome appearance. It is somewhat remarkable that Loudon, who omitted almost nothing in his "Arboretum," does not name any insect that attacks the Lime. The English Beech is often attacked by an aphis, undoubtedly the Psylla fagi, which Loudon mentions as injurious to this tree. It is not uncommon in some seasons to see the brick side-walk and fence around my residence, beneath a Melton Weeping Beech, 60 ft. high, covered with a syrup-like substance, appearing like huge drops of rain, but which even a heavy shower does not obliterate or wash off. It is very disagreeable, for one cannot stand or sit under the tree after it becomes affected in this way. All the leaves look and feel as if they had been syringed with some sugary or sticky liquid. However, almost every tree has its enemies, which disfigure or devour it; the only exceptions that I can recollect are the Magnolia, Tulip Tree, and Rock Maple, which are always perfect in leafy beauty, magnificent ornaments to every park, pleasure ground, or broad avenue. C. M. Hovey.

Boston, Aug. 25.

Pelargoniums v. Formal Leaf Gardening.—This in many respects peculiar season has shown those who are fond of formal leaf gardening that it is useless indulging in it without a large and convenient supply of water. Another matter, too, is quite certain, and that is, given a season of drought, and Pelargoniums will always stand well to the fore. The present season has been emphatically a Pelargonium one, inasmuch as they have done wonders as regards blooming. Amongst scarlet kinds I have seen none equal to Corsair, and, as a rosy-lilac, Amaranth has been with me, and still is splendid; Douglas Pearson, Wm. Thompson, Mary Flower, Rev. T. F. Fenn, Mrs. Vincent, as crimsons, are all in their best array. Amongst older nosegay varieties Waltham Seedling is conspicuously good, and so also is that excellent vase Pelargonium, Violet Hill Nosegay. I do not think the merits of this Pelargonium as a vase plant are sufficiently well known. Two vases which I have of it are one mass of bloom; one can scarcely put one's finger on the plant without touching a flower.—P., *Nottingham.*

New Species of Tulip.—In the third volume of the Report of the Imperial Botanical Garden of St. Petersburgh, Dr. Regel describes three new species of Tulip, the introduction of which into cultivation will doubtless be most interesting to all growers of these plants They are:—(1) Tulipa Korolkowi, a kind possessing a dwarf habit of growth, having purple flowers spotted with black at the base of the petals, which are narrower than those of the ordinary Tulip; (2) T. tetraphylla, which has also narrow petals, of which the three interior are of a pale yellow colour, and the three exterior striped with violet; and (3) T. Turkestanica, a sort much resembling the last-named variety, but bearing from two to six blooms on each stem, quite unusual in the Tulip.—W. E. G.

SOCIETIES AND EXHIBITIONS.

CRYSTAL PALACE FRUIT SHOW,

Sept. 21st to 23rd.

This exhibition, which has been for years the best of its kind held near the Metropolis, has at last dwindled down to something but little better than an ordinary provincial show—indeed, far below those held at such places as Edinburgh, Glasgow, Dundee, and Manchester in everything, if we except the convenient mode of staging and other unexceptional arrangements for which the Palace Company always has been noted, and which were on this occasion as evident as in previous years. There are several reasons why the show of fruit here this season is not so good as formerly. In the first place, this is not a good fruit year, and then most of the principal fruit growers for exhibition had made ready their exhibits for the liberal prizes offered by the Westminster Aquarium Company, but which project is unavoidably, as we are informed, broken up owing to a change in the directorate. Again, the prizes offered by the Crystal Palace Company this season are not calculated to bring out the finest produce, and several exhibitors of former years are this season absent, simply because the prizes offered are not in any way commensurate with the value of their fruit; what was exhibited was nevertheless good. Messrs. Lane sent excellent Muscat Grapes and pot Vines; these, with a few good Queen Pines, and a splendid fruit of Charlotte Rothschild sent by Mr. Miller, were the most notable exceptions. Apples were really good throughout; Pears on the whole decidedly not so satisfactory, the best fruit being Souvenir du Congrès and its parent Williams' Bon Chrétien, the splendid specimens which we have seen here in former years being on this occasion conspicuous by their absence. Peaches and Nectarines were generally good. Plums, however, were better than usual, there being but few dishes below mediocrity, and many were really first-rate examples of good culture. Gladioli and Dahlias were in better condition than we have seen them elsewhere this season. Quilled Asters were also well represented, and among the objects not sent for competition were many of considerable interest.

Collections of Fruit.—In the class for collections of fruit (six varieties) there were nine competitors, the fruit sent being in many cases of very ordinary quality. The best collection came from Mr. Jas. Neighbour, gardener to G. Withes, Esq., of Bickley Park, who had well-coloured Violette Hâtive Peaches, white Magnum Bonum Plums, very good Pine-apple Nectarines, Golden Perfection Melon, Muscat of Alexandria and Alicante Grapes. The Muscats were small, but well coloured, and the Alicantes were good examples of skilful culture. In the second collection we noted a splendid dish of Morello Cherries, some being nearly an inch in diameter, and a good sample of Williams' Bon Chrétien Pears. In the other collections the best dishes were Jefferson and Golden Drop Plums, large Brunswick Figs, Early Crawford Peaches, one of the best of all the American yellow-fleshed varieties, Victoria Nectarines, also good dishes of Pond's Seedling and Coe's Golden Drop Plums.

Pines.—In the class for Pines, twelve fruits were shown, the best being a well-ripened Queen, from Mr. Bond, of The Beeches, Weybridge. This weighed 6 lb. 4 oz., and obtained the premier award in its class, to which Mr. Akehurst and Mr. Baker also contributed excellent fruit. Mr. Harris, gardener to F. Norman, Esq., of Oakley, near Bromley, sent a handsome specimen of the large-pipped, pale-tinted Lemon Queen, a distinct fruit not so often seen as it deserves to be. Mr. Ward, gardener to Mr. Miller, of Bishop's Stortford, sent a noble fruit of Charlotte Rothschild, weighing 8 lb., and this obtained the first prize in the class for other varieties than Queens; the second prize being awarded to a good Smooth Cayenne, from Mr. Plummer, of Cannon Hill Park, Merton; Mr. Toomer, of Streatham, being third, with a columnar fruit of a deep orange-red tint, named "Abacachi."

Grapes.—Black Grapes were fairly represented by ten exhibitors, although the best fruit was kept away through causes to which we have already alluded. The best Black Hamburghs came from Mr. John Cooper, gardener to Mr. Yeatmans, of Shawfield, Bromley, who had three well finished clusters, averaging perhaps 1½ lb. each; Mrs. Crane, of Chislehurst, was second with large fine-berried bunches, which were not, however, so well finished as those last named. Mr. Goldsmith, who deserved to have been placed second, had rather small bunches, but they were of excellent quality. With the exception of those named most of the fruit was of second-rate quality only. In the other class for Black Grapes Messrs. Lane were first with grand clusters of Black Alicante, Mr. Earp being second with smaller clusters, which were in point of quality and finish, if anything, even more perfect than those of Messrs. Lane. Six exhibitors competed in this class, and the fruit generally was good. In the class for heavy bunches the first prize was awarded to a wretchedly shrivelled and ill-coloured cluster weighing 4½ lb., and the second prize was awarded to a large-berried bunch weighing 2¾ lb., the colour being anything but good. Bunches like those staged for weight on this occasion do not deserve prizes at all. The Lady Downes sent by Mr. Hall, of Tulse Hill, were in every way excellent, except that they were scarcely ripe enough. Mr. Cole, of the Grove Vineyard, Feltham, sent three good clusters of Barbarossa. The best Muscats out of five collections came from Messrs. Lane, the clusters being large and perfect both in shape and ripeness; Mr. Pepper, of Bromley Common, was second with small bunches, but ripe and otherwise good; Mr. Cole was third with bunches scarcely ripe. Mr. Toomer sent three good and perfectly finished clusters of Foster's Seedling; Buckland Sweetwater in good condition came from Messrs. Lane; Trebbiano being fairly represented by a stand from Mr. Oliver Goldsmith, of Dorking.

Peaches and Nectarines.—Peaches came from twenty-five competitors, the best being a dish of splendid fruit, seemingly Early Crawford, from Mr. J. Burnett, of the Deepdene, Dorking; Mr. George Goldsmith was second with Reine des Vergers, and Mr. Penfold third with highly-coloured fruit of Violette Hâtive. An extra first prize was awarded to Mr. George Holliday, of Bletchingley, for a dish of large fruit of the Salwey, one of the latest of all Peaches. Among the other varieties shown, we noted good fruit of Alexandra Noblesse and Prince of Wales (two of Mr. Rivers' seedlings), Royal George, Grosse Mignonne, Bellegarde, Walburton Admirable, Stirling Castle, and Barrington. Nectarines came from twenty-three exhibitors, the individual fruits generally being small, but highly coloured. The first prize was given to a splendid dish of Rivers' Pine-apple from Mr. James Neighbour: Mr. Penfold was second with Downton, and Mr. Jordan third, with Elruge. Among other varieties we noted Elruge, Violette Hâtive, Stanwick, Pitmaston Orange, Grosse Violette, and Victoria.

Melons.—In the green-fleshed class, fourteen fruits were shown, the best in flavour being a variety resembling Golden Perfection, from Mr. O. Goldsmith. Messrs. Kelway & Son were second with Heckfield Hybrid; and Mr. Penfold third with Conqueror. In the scarlet-fleshed class, fifteen fruits were shown, the first prize being awarded to Mr. Holliday, who had a large fruit of Scarlet Gem. Mr. Glasscock, Shirley House, Croydon, was second with Hatley's Hybrid; and Messrs. Kelway third with a handsome fruit named Eclipse. With the exception of these, most of the fruits shown were coarse, and of inferior quality; indeed, this has been a general complaint among Melon growers this season.

Plums.—In the class for single dishes there were nineteen competitors, the fruits generally being of unusually good quality. Mr. Jas. Neighbour was first with large, but scarcely ripe, fruit of Coe's Golden Drop; Mr. Coulter was second with Transparent Gage—really splendid fruit; and Mr. Jas. Dean, Titsley Place, Limpsfield, third, with excellent fruit of Jefferson. In the class for collections of Plums (three dishes) ten exhibitors competed, the fruit generally being far above mediocrity. Mr. W. Holder was first, with splendid dishes of Jefferson, finely-coloured Green Gage, and large examples of Coe's Golden Drop; Mr. Jas. Dean was second, with fine fruit of Kirke's, Jefferson, and Green Gage; Mr. T. N. Penfold was third, with Black Diamond, Jefferson, and Coe's Emperor, the last a large and showy purple Plum flushed with scarlet; Mr. O. Goldsmith, who was fourth, had Goliath, Jefferson, and Kirke's, the latter one of the largest and most showy of all purple varieties.

Apples.—In the class for four dishes of dessert varieties, Mr. Webb, of Calcot, was first with fine fruit of Cornish Gillyflower, excellent Ribstons, scarlet Astrachan, and Cox's Orange Pippin; Mr. Tanning, of the Convent Garden, Roehampton, was second with Autumn Pearmain and King of the Pippins, both very large, also Ribston and Margil; Mr. Penfold, of Beddington, was third with King of the Pippins, Ribston, Fearn's Pippin, and Cellini. Kitchen Apples were well represented, the fruit generally being large in size, and in cases in which it came from warm sandy soils, highly coloured. Mr. Brush, gardener to Lady Hume Campbell, was first with Hawick King, a seedling resembling Golden Noble, Hollandbury, and Wellington. Mr. Ansell had a splendid dish of Cellini Pippin, highly coloured; Mr. Murrel was second in this class with Beauty of Kent, Hawthornden, and Warner's King; and Mr. R. Webb third, with splendid fruit of Astrachan, Fillbasket, and Blenheim Orange. These three dishes contained decidedly the handsomest fruit shown in this class. Among other varieties were Woodstock Pippin, Lord Suffield, Nelson's Glory, Keswick Codlin, and Beauty of Kent (very fine), and Stone Pippin. Thirteen collections were shown in this class. An interesting collection of kitchen and dessert Apples came from Messrs. Paul & Son, of the Old Nurseries, Cheshunt; and Mr. R. Webb, of Calcot, Reading, showed a large collection of Filberts and Cob Nuts.

Pears.—In the class for weight Mr. W. Jordan had the heaviest nine fruit, weighing 7 lb. 2 oz.; the variety was Grosse Calebasse; Mr. O. Goldsmith was second with Catillac; and Mr. G. Goldsmith third with Beurré Diel. Mr. G. Morell had a dish of Beurré Clairgeau weighing 5 lb. 6 oz., very highly coloured, from a north wall. In the large class for Dessert Pears, three dishes, seventeen exhibitors competed, Mr. W. Holder securing the first prize with fine fruit of Gratioli, Williams' Bon Chrétien, and Theodore Mare, a variety closely resembling Beurré Superfin. Mr. Penfold, who was second, had Souvenir du Congrès, in excellent condition, Beurré d'Amanlis, and a splendid dish of Williams. The third prize was awarded to Mr. James Bristow, who had Beurré d'Amanlis, Beurré Hardy, and Louise Bonne of Jersey. Mr. James Neighbour, who was fourth, had Beurré d'Amanlis, Jersey Gratioli, and Louise Bonne of Jersey. Among other varieties shown were Beurré d'Amanlis, Panachée, White Doyenné Durandeau, White Beurré, Marie Louise, Beurré Bosc, unripe, of course, as was also Duchesse d'Angoulême. Flemish Beauty, Autumn Bergamot, Beurré d'Aremberg, and Doyenné du Comice were also represented by good fruit.

Figs.—Of these five dishes were shown, the best, to which the first prize was awarded, being a dish of Brunswick from Mr. W. Chisholm, of Maidstone. Mr. Miller, of the Southdown Nursery, Maidstone, sent a perfectly ripe dish, which arrived too late for competition. Other dishes consisted of fair examples of Brown Turkey.

Cherries.—Morello Cherries came from four exhibitors, and were of very fine quality. Mr. Jones, Elvetham, Winchfield, was first, with grand fruit. Mr. Taylor and Mr. Harris also had fine fruit, as had also Mr. Bones. It is to be regretted that prizes are not also offered for the delicious late-fruited dessert varieties to which we alluded in our notes of last week.

Gladioli, Dahlias, &c.—Gladioli were well represented, the spikes being in nearly all cases fresh and of good dimensions, the colours being also bright and distinct. Messrs. Robertson & Galloway, 157, Ingram Street, Glasgow, were first with a splendid collection of thirty-six varieties, among which we noted Meyerbeer, vermilion-scarlet; Hercules, scarlet; Ondine, rosy-white; Le Phare, vermilion-scarlet, rosy throat; Orpheus, white streaked or feathered with crimson; Mons. Legouve, scarlet, white stripe; and others. Messrs. Kelway and Sons, of Langport, were second with good spikes, among which we especially noted Rosita, white feathered with rose; Murillo, rose, white stripe; Amaranth, smooth, rosy-vermilion, and of good shape; Leandre, a bright lilac-purple striped with white, very distinct and good, as is also a paler variety named Psyche; Genevra is a stately variety with a noble spike, the colour being bright rose feathered with scarlet, and a white throat. Good collections were also shown by amateur growers. Mr. James Betteridge took the principal prizes for Quilled and Tasselled Asters. Mr. Turner was first in both the principal classes for Dahlias; Mr. George Smith, Hedge Lane, Edmonton, being first in the amateurs' class with twelve fine blooms. The Dahlias and Asters were arranged on a circular stand in the central transept, the interior of the stand being filled with graceful Palms, Tree Ferns, Musas, and other vegetation, which formed a pleasing background to the bright-tinted flowers. Mr. Betteridge showed several stands of Quilled Asters, among which we noted Blushing Bride, delicate rosy-lilac with a white centre; Bridegroom, white centre with delicate lilac border; Princess Royal, broad guard florets, and full rosy disc; Princess Alice, white cushion and rosy or flesh-coloured ray. Mr. Charles Turner furnished collections of Dahlias; and Mr. Eckford, Swindon, sent several new seedling Verbenas, with large and bright-coloured flowers. George Rawlings, Romford, sent a stand of new and other Dahlias, among which we noted Herbert Turner, white, fine shapely bloom; Willie Eckford, crimson; Earl of Beaconsfield, rich purple; Memorial, rosy-lilac; and Julia Davis, a good gold-yellow variety.

Miscellaneous.—Very beautiful collections of cut Roses were sent by Messrs. Paul & Son, Messrs. W. Paul & Son, and Mr. Chas. Turner. The last-named had also an effective stand of Pompon Dahlias. A dozen Cockscombs, dwarf and with large crimson heads, came from Mr. Foreman, Laurie Park Gardens. Mr. Horton, Kelsey Manor, Beckenham, sent three specimen Ferns—Gymnogramma ochracea, Adiantum Farleyense, Davallia Mooreana—all in excellent health and vigour. The Adiantum was decidedly the freshest, and one of the largest we ever saw exhibited. Mr. Jas. Ford, Windermere House Gardens, Norwood, sent a couple of well-flowered specimens of Clerodendron Balfouri. Mr. Norrie, Fernwood Gardens, Sydenham Hill, sent a good basket of Trophy Tomato. Messrs. Lane & Sons sent three splendid pot Vines bearing fine crops of large, well-ripened clusters, the varieties being Foster's Seedling and Black Alicante. Mr. J. Davy, gardener to B. Drew, Esq., Streatham, showed a Lady Downes Vine in a pot, bearing seven bunches of excellent Grapes. Mr. James Neighbour sent Red Grape, Champagne, and Red Dutch Currants, a really fine dish.

There was a small, but very interesting exhibition of Potatoes and other vegetables from cottage garden growers.

Westminster Aquarium Fruit Show.—The Fruit Show arranged to be held here on the 4th and 5th of October next, will not take place, owing to a change in the directorate. No one can regret this more than I do, for I feel sure it will be a great disappointment to many who will have made considerable preparations for it; and I confidently looked forward to seeing at Westminster, in October, one of the largest and best fruit shows ever held in London. I have no doubt that flower and fruit shows will be again held at Westminster next year. I did my very best to make them a success this year, and I hope to have the pleasure of again meeting all the exhibitors who so well supported me with their grand exhibits of flowers and fruit, and I take this opportunity of thanking them for the assistance which they gave me.—John Mills, *Royal Exotic Nursery, South Kensington.*

NOTES AND QUESTIONS—VARIOUS.

Potato Crop in Yorkshire.—Potatoes in Yorkshire are selling at 8d. to 1s. per stone, markets being well supplied. A few diseased tubers are occasionally found, but not sufficient to cause alarm. Every one says Potatoes are small this season, but that is owing to the dryness of the summer.—Henry Taylor.

American Potatoes.—These being pronounced by many to be a failure, I may state that several of them succeed very well here; Early Rose, Early Sovereign, Alpha, Snowflake, and Climax have done so well with us that they have been preferred to all other kinds for table use. They are all beautifully white, literally balls of flour, and excellent in quality. The crops, too, are abundant, and I am of opinion that this dry season has improved their quality. Other American varieties are also very good, and all are great croppers.—D. Lumsden, *Blozholm Hall.*

Verbenas treated as Annuals.—"G. S. M.," who inquires (see p. 313) what good bedding plants can be raised from seed, will find the Verbena, if sown and treated as an annual, one of the most useful plants he can have for decorative purposes; I have grown Verbenas in this way for several years. We do not plant them in the flower garden proper, but in outside beds or borders, and find them exceedingly useful for furnishing cut flowers; in fact, I prefer them to plants struck from cuttings, as they are more vigorous, and do not suffer from mildew. They should be sown in heat early in March, and by the end of May they will have become good, strong plants. Of course care must be taken to procure a good strain.—James Pink.

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

MR. HOVEY ON STRAWBERRIES AND THEIR CULTURE.

I HAVE read with much interest the extract on the Strawberry given in THE GARDEN (see p. 115). For fifty years I have made Strawberry culture a speciality, having had during that period, with the exception of the last three or four years, not less than forty varieties under cultivation, besides hundreds of seedlings. Strawberry culture has indeed made greater progress than that of any other kind of fruit, the Grape and Pear not excepted—for a century ago we had the Black Hamburgh, Chasselas, and Muscat of Alexandria, three as good Grapes as we need require; and we had the White Doyenné, Brown Beurré, and Easter Beurré, three as good Pears as could be desired. But what did we have in the way of Strawberries? Nothing but the Wood and Virginia, and these two varieties as late as fifty years ago were the only sorts which supplied our markets. The first progress in Strawberry culture I believe commenced with Mr. Knight, and was followed up by Keen, Wilmot, Myatt, and others in England; by myself and others in America; and by De Jonghe, Gloede, and others on the Continent, the result being varieties by the hundred, and many of them of the highest quality. It is believed, so far as we have any record, that the first seedling Strawberries (except Alpines), certainly the first crosses or hybrids, whichever we may be pleased to call them, raised in this country were grown myself in 1833. After cultivating Keen's Seedling, Wilmot's Superb, Elton Pine, Methven Scarlet, and many more, I became convinced that they were uncertain bearers and unsuited to our climate. Keen's Seedling was large and fine in quality, but wanted more careful treatment than we could give it; Methven Scarlet was perfect as regards culture, but sour, pale in colour, and soft in flesh. After three years' culture of twenty or thirty varieties confirming these views, I commenced the production of seedlings by hybridization. Keen's Seedling was first grown in this country near Boston by an English gardener, who had the plants sent to him in 1828 or 1829, together with Wilmot's Superb, both of which had just before been described, with beautiful portraits, in the "Transactions" of the London Horticultural Society. Berries were exhibited before the Massachusetts Horticultural Society, and attracted great attention on account of their size and beauty, as well as their excellence. I procured some of the plants as soon as they were to be had, paying, as I well recollect, 2s. per plant. At that time was added the Methven Scarlet, imported first by the late Judge Bird, of Albany, New York. All were very large Strawberries, but, as I have stated, wanting in some quality to render them certain and profitable. Selecting six or eight of the best, I commenced fertilizing them, the result being a quantity of plants, from one of which Hovey's Seedling was produced. Keen's Seedling was what is termed with us a staminate, or perfect flower, and the Methven a pistillate, or imperfect flower. And here I might remark that no change ever takes place in the pistillate sorts, or, to be strictly correct, I ought to say no change thus far has ever taken place under my observation. Hovey's Seedling (when true) has never been known to produce a single staminate flower. This has been denied by some; but wherever flowers with stamens are found in a bed, they are accidental seedlings which always spring up in a bed more than two years old, or mixtures which have in some way got into the bed. A year ago one of Hovey's Seedlings carried off the highest prize for the best four quarts, in competition with all the largest and finest Strawberries, and though it is forty-three years since it was raised, there could not be found in the whole bed, 100 ft. long, a single blossom containing stamens. This ought to settle the question, though it may not. A staminate flower is positive evidence of the spuriousness of the variety. Now as regards the species, Fragaria grandiflora may be, as has been asserted, merely a strongly-marked variety of F. chilensis. It is certainly very marked indeed; so much so, that it is impossible, under my own experience, to cultivate it in our climate. Ten or more years ago a friend who was in Valparaiso, where the Chili Strawberries are offered for sale so large that they are strung on strings of a dozen each, purchased one of the strings, dried part of the berries, and brought them home and gave them to me, thinking the present would be highly prized by me, as it truly was. I sowed the seed at once with the hope of soon obtaining some of the berries, which my friend said grew as large as hens' eggs. The seeds vegetated and grew well, situated, as they were, in a box in the greenhouse, where they were wintered the first year. In spring we prepared a piece of ground and planted them out, and they grew well for a while until hot sunshine set in in July, when the foliage began to suffer; they looked, however, pretty vigorous in the autumn, and the plants were protected in winter, as other sorts are, viz., with a thin covering of straw manure or coarse litter. Alas! however, in spring, when the covering was removed, not even one plant was to be seen; all had perished. It proved much too tender for a climate in which the thermometer often falls as low as zero. I had, however, well studied the plants; the leaves were of a glaucous green hue, somewhat incurved at the edges, very hairy, as were also the leaf-stalks; the flowers were small, and, in fact, the plants were entirely unlike any of the kinds which had been described in the "Horticultural Transactions" as having been grown from F. grandiflora. Certainly Keen's Seedling has large, round, thick, almost coriaceous glossy foliage, and Keen's Seedling is by no means a tender variety like the Chili, though it will not stand the rough treatment that most of our American seedlings will endure; in strong loam it flourishes satisfactorily, and for several years after its introduction, until Hovey's Seedling took its place, it was a popular and valuable berry. The British Queen and Admiral Dundas seem to be almost direct descendants from the Chili. The former is equally difficult to cultivate, and the latter, though we have at times grown it almost to perfection, with berries 8 in. in circumference, is so uncertain that we could never grow it two years in succession. The plants seem to be exhausted after a crop. La Constante was first introduced to this country by me; I got it from M. Gloede, together with Marguerite, Napoleon III., Lucas, La Sultane, and a great many others; I also obtained Oscar, Sir C. Napier, and other English varieties from the late Mr. Nicholson. The labour of keeping so many kinds distinct I found too great, and the larger part of those which had no especial merit were discarded four or five years ago, reducing the collection to about twenty kinds, all American except La Constante and Triomphe de Gand, the former in a heavy soil being one of the hardiest and handsomest of Strawberries. For six years I had on the same spot a bed of this, which was the wonder of all who saw it, but on a light soil the foliage burns in summer. No berry, as regards size and beauty will give more satisfaction than this, if the soil be a clayey loam well-drained. Lucas, which some of your correspondents recommended some time ago, is a good-looking fruit, but it has a medicinal flavour which renders it unpalatable. As regards F. virginiana, it is often diœcious; I have frequently found on my own grounds wild plants of it which produced all pistillate flowers, though the majority were staminate. F. elatior (the Hautbois) has received but little attention; with the only experiment I ever made the result was the same as that of Mr. Knight and Major Clarke—the hybrids were barren. As an indication of the unsuitableness or inferiority of foreign Strawberries in our climate the American Pomological Society, at their last meeting in Chicago in 1875, admitted only thirty-one varieties out of more than 500, which had been raised and introduced during the last thirty years, and only four of these are foreign, viz., Jucunda, Napoleon III., Victoria, and Triomphe de Gand. In Massachusetts, Hovey's Seedling and Jenny Lind are the favourites; that is, they are double starred (**), which means they are extra valuable. In the West Longworth's Prolific and Triomphe de Gand are the best; and in the Middle States Charles Downing and Triomphe de Gand. But the market Strawberry everywhere, except New York and Massachusetts, is the poor, sour, and dingy-coloured Wilson's Albany, a variety which English cultivators would discard. The pistillate varie-

ties are the best breeders, for they cannot fertilize themselves, but must have foreign aid. A bed of Hovey's Seedling, if planted near a dozen staminate kinds, is sure to be fertilized more or less with each sort, without artificial means, though of course the parent would not be known. Col. Wilder, who has raised a great many seedlings, but none which he thought worthy of a name, until President Wilder was produced, used the Hovey and La Constante, as he wanted to get the quality of the former with the beauty and uniformity of the latter, both being of equal size. He succeeded admirably; the only fault being that President retained the constitution of La Constante, the plants requiring heavy soil and good culture, or they burn up and dwindle away under our great summer-heat. I have no doubt that seeds selected from the finest berries of Hovey's Seedling self-fertilized by good varieties growing near it, would produce as good average berries as many of the so-called new and superior varieties. The last experiment which I made was with a few seeds of President Wilder, in order to ascertain whether or not they would go back to either of their parents. Some twenty or thirty plants were raised; all were good, the majority of them being large and fine, but one was much superior in vigour to either La Constante or President Wilder, though no larger; this I have named The Souvenir. So far as the culture of Strawberries for the market is concerned in this country, the quality is of very little consequence. A sour and comparatively worthless fruit is just as good as a superior one, and Wilson's Albany is the popular berry, because it will grow and bear in any soil, and gathered before too ripe, carries well. Few of the choice high-flavoured and sweet berries find their way to market; these are grown extensively for home consumption, but if they could be grown for sale they would realise good prices. Doubtless after a time public taste will alter; but so long as the South supplies the North, we may expect but little improvement. Mr. Darwin, probably quoting from some authority, states that "Several English varieties which in this country are free from any such tendency as staminate and pistillate plants when cultivated in the rich soils under the climate of North America, commonly produce plants with separate sexes." "Thus," he further says, "a whole acre of Keen's Seedling in the United States has been observed to be almost sterile from the absence of male flowers." Unfortunately for the confirmation of this theory of separation, the Keen's Seedling so called was not Keen's Seedling, which was never grown by the acre or half acre in the United States.

A FEW REMARKS ON ROSE CULTURE.

A good yellow loam, inclined to clay, is the best soil for Roses; this, well-drained, and trenched 2 ft. deep, with a mixture of rotted cow manure, will ensure a firm, vigorous growth. To every barrowful of manure may also be added half a bushel of half-inch bones. This will give a more lasting supply of nourishment to the roots. I will suppose the Rosery to be protected by a shrubbery or otherwise from prevailing winds, and not, as is frequently the case, subjected to violent draughts at the angles of buildings. Planting may be done at any time between the fall of the leaf, and the swelling of the buds in spring, though autumn planting is to be preferred to that done in spring. In any case the plants ought to be obtained early. During the dull season they are less liable to injury than at any other time in transit, and they can be laid in the ground in a sheltered place until the situation in which they are to grow is ready for them, and to which they should be transferred without undue exposure. Pruning is an operation which requires judgment both as to manner and time. Newly planted Roses should not be pruned until the points of the shoots have burst into leaf. The period of blooming will be somewhat later than with established plants pruned earlier, but good blooms may nevertheless be expected, and what is more important, the future health of the plant will be promoted. In the case of dwarfs or standards, a cup-like form is the best shape at which to aim, each shoot springing away equally outwards and upwards from a common centre. Therefore, prune back to a bud pointing outwards, whether it be the second, third, fourth, or fifth bud from the base, in the case of an established plant, and afterwards, when the growth is more advanced, disbud all shoots having a tendency to unduly crowd the centre, or cross or interfere with the others. This is a rule which should guide the inexperienced not only in Rose pruning, but also in that of all other kinds of bushes. In the case of newly planted Roses prune back to three, four, five, or even six, buds from the base, bearing in mind what has been said. This applies to the larger section of Hybrid Perpetuals, and others commonly known as standard, half-standard, and dwarf Roses. Another point to attend to in planting dwarf Roses is to put the junction of the scion with the stock at least 1 in. below the general surface of the soil. The tendency of the stock to throw up suckers is thereby checked, and the emission of roots from the scion itself is greatly promoted. The sécateur is the best pruning implement for an amateur, though nothing can beat the knife for speed, precision, and cleanness of cut in the hands of a practical operator. Green fly is the greatest pest with which the Rose grower has to contend, and nothing is more effectual in the way of destroying it than Tobacco smoke, where its application is practicable. I have seen a hood made of oiled paper, stretched over a light wicker-work frame, placed over the plant, and by the introduction of the nozzle of the fumigator through a hole at the bottom the application of Tobacco smoke has been most effectually done. Fowler's Insecticide is also a useful composition for destroying green fly; there are likewise some species of caterpillar which in the earlier part of the season are pests to Rose growers. The best remedy for these is to nip them between the finger and thumb. Next to green fly, mildew is the greatest enemy with which the Rose grower has to contend. To cure this, when the sun has lost its power in the afternoon, damp the affected trees with the syringe, then, with the sulphurator or a dredging-box apply flowers of sulphur or sulphur vivum perfectly dry. Another way is to take 1 lb. of sulphur vivum, and put as much water to it as will work it up into a paste; it will be easily dissolved in about 3 gals. of water, and should be applied with a syringe, keeping the mixture well stirred. It is of importance to use sulphur vivum, which is more effectual than common yellow sulphur. The tendency of modern gardening seems to be to isolate whole families of flowers into groups, and the Rose has doubtless so many charms of its own, that we cannot have too much of it, and a large bed of Roses in full bloom is certainly a grand object; but their beauty is short-lived, and I like best to see them in mixed borders, where, when in bloom, their charms are heightened by contrast with other flowers. Climbing Roses have a pleasing effect when associated with Honeysuckle in a hedge, or on a rustic porch, and in many unexpected situations and combinations which will readily suggest themselves.

Knowefield Nursery, Carlisle. Baxter Smith.

Autumn Flowers in Small Gardens.—In small gardens flowers are scarce this autumn, a circumstance which arises from three causes, viz., overwatering during the hot weather; not planting a sufficiency of autumn flowers; and placing too much faith in Pelargoniums. The too copious waterings have induced robust growth, at the expense of bloom. Calceolarias and other plants also show the effects of over-watering, and are already going off. What I would suggest, is a greater use of late-blooming hardy perennials, which, from their constitution and general character, would not require a great deal of watering; besides, a greater variety of both flowers and foliage would thus be obtained. That, combined with a more artistic mode than at present prevails of laying out small gardens, would greatly enhance the beauty of the various small places that abound near large towns. The bedding-out system receives too much consideration in such places. I find from experience that the less the bedding system is adhered to, and the greater the variety of plants employed, the better show of flowers is the result.—W. J. May.

Floral Decorations.—As soon as cut flowers become somewhat scarce in gardens, clusters of highly-coloured wild berries will be found in many cases to be a good substitute for them, and none are more useful at present than the fruit of the common Dogberry (Cornus sanguinea), to be found in many hedge-rows in the southern counties, the berries of which are most effective when subjected to artificial light on the dinner table. I saw a few days ago a dinner table decorated, in which these berries were employed, and with such success that I am tempted to give a description of it. It consisted of a centre-piece only, and that was composed of a plateau on which stood a flower-pot of frosted glass, in which was placed a well-grown plant of Maiden-hair Fern (Adiantum cuneatum), and round the silver edge of the plateau was arranged a thick wreath of branchlets of the Dogberry; the effect of this wreath against the white of the damask cloth and frosted silver of the plateau was all that could be desired. The wreath was formed by just placing the little branchlets one partly over the other, so as to hide the stems; it was done in a few moments, and it kept fresh without any moisture all the evening. The berries of the Arbutus could doubtless be employed somewhat later in the season, in the way I have above described, with very good effect; and also others too numerous to enumerate.—A. Hassard.

NOTES OF THE WEEK.

Grapes at Heckfield.—The Vineries at Heckfield are just now well worth the inspection of all interested in Vine culture. In one house, containing Lady Downes grown on the extension system two rods to a Vine, there is an even crop of well-finished clusters, each of which will average about 2 lb. Some sturdy Vines, planted scarcely eighteen months ago, are bearing handsome clusters, some of the bunches of Barbarossa weighing apparently from 9 lb. to 10 lb.; Gros Colman, 6 lb. to 7 lb.; Trebbiano, well-coloured and of excellent flavour, 6 lb. to 8 lb.; and Alicantes, 4 lb. to 6 lb. In addition to these there are even crops of excellent every-day table fruit, such as Muscats and Black Hamburghs. Royal Muscadine on the open walls is also bearing wonderful crops of fine fruit.

Large Fuchsia Riccartoni.—The Knight of Kerry writes to us from Valencia (Ireland) as follows concerning a large plant which he has of this Fuchsia:—"I believe that at this moment it is one of the finest sights in the shrub way that can be seen. It measures just 148 ft. 3 in. round the extreme tips of its branches, and would have been considerably larger had it not been stopped at one side to form it into an arch to cross over a walk. The south side of it is one blaze of most beautiful blossoms, a condition in which it has been for some time. It is now exactly twenty-two years since it was planted, and during that time nothing whatever has been done to further its growth. It has simply been left to itself."

The Vine Disease.—The French papers state that the Phylloxera is making fearful ravages in the Department of the Rhône. The latest account shows that the vineyards of Côte Rôtie, Conderieu, and others in the interior have suffered severely; the Hermitage is entirely lost; the Vines of the Vienne at Saint-Jean de Bournay are seriously attacked; and the visitation has made its appearance at Mornant, Taluyers, Orliénas, and Vourles; whilst the vineyards of Saint-Romaineu-Gal and Pontcharra have been much injured.

The Fever Gum Tree in Italy.—The Italian Government, finding that the Eucalyptus globulus has a beneficial influence in malarious districts, has presented to the landowners of Italy large supplies of slips of the tree for the purpose of forming plantations where its virtues seem required. The Government also intends to grow the Eucalyptus along the boulevards of the large cities and even along the various lines of railway throughout the kingdom. Landholders themselves are following the initiative of the Government, and in a few years Italy expects to drive malaria as effectively from its low-lying districts as ague has been expelled from those of Lincolnshire.

New Crimson-rayed Lily.—This beautiful Japanese Lily belongs to the L. auratum type, and though the plant which we saw of it was only about 30 in. in height, it bore a flower fully 11 in. in diameter. Its segments, which are creamy-white in colour, measured 3 in. in breadth, and have a broad central feathered ray of maroon crimson approaching to black in the centre. In addition to this ray there are also purplish-crimson spots and papillæ, and the whole flower possesses a boldness and richness of colouring which we have not as yet seen approached by any of the varieties of L. rubrum vittatum. It is questionable whether the dwarf habit and short, crowded leaves, are characteristic, or whether if the stature of the plant increases under good culture, the flower will not also become enlarged in proportion, but even supposing no improvement possible, this variety must ever remain one of the most notable of Japanese Lilies. Mr. Ball, whose property it is, proposes to call it L. auratum cruentum.

Flower Gardening at Heckfield.—The display of succulent plants, Palms, Abutilons, Japanese Honeysuckle, and stately-habited plants made here this season, is one of the most complete and artistic of its kind we have yet seen, the breadth of arrangement, richness of colouring, and the wealth of materials used being as remarkable in their way as the charmingly varied and well-wooded landscapes to which the flower garden forms a foreground. The tasteful manner in which the rather harsh outlines of some large stone vases are softened off by planting bold bosses of the Golden Japanese Honeysuckle is worthy of imitation wherever stone vases predominate on turf and among stately tree growth. A tall-growing form of the crimson-tailed Amarantus caudatus and the rosy-flowered Sedum spectabile are also used most effectively in the borders.

Boronia elatior.—It should have been stated in last week's Garden that this fine new plant was lately introduced by Messrs. Veitch, of the Royal Exotic Nursery, Chelsea; also that the plate was from a drawing by Miss Marian Chase, from a sketch from a plant supplied by Messrs. Veitch.

RAISING SEEDLING FUCHSIAS.

The following remarks are intended for those who may be contemplating the raising of a few Fuchsias from seed, and, though no particularly striking results in the way of obtaining new and fine sorts may ensue, yet the peculiar enjoyment derived from blooming seedling flowers is of such a nature as to constitute one of the chief pleasures of gardening. In order to secure as far as possible good varieties of the Fuchsia from seed, some care is necessary to obtain it; and not only should good varieties be selected for seeding purposes, but the flowers need to be fertilised, so as to obtain in the progeny the certain qualities or characteristics of a desired Order. Having, therefore, selected the plants from which it is intended to take seed, they should be carefully watched as they expand, removing all imperfect blossoms, and retaining only those which are quite true to character. From the flower intended to bear seed all the anthers should be cut away; then, by means of a fine camel's hair brush, the pollen should be collected from the flowers to be used for fertilising purposes, and laid on the stigma of the parent, tying a piece of thread or some such mark about the flower to identify those which have been fertilised. A bag made of thin muslin or some such material should be used to cover the fertilised flowers, or bees and other insects will spoil the work of the operator. The seed will ripen just as well out-of-doors as in-doors; but unless means be taken to protect the seed-pods, the birds are apt to take them. Like other fruits, the seed-pods of the Fuchsia will fall from the tree when ripe, sometimes before they are ripe; and it was the practice of a raiser of Fuchsias, when a pod fell, immediately to press it in the palm of his hand, and carefully pick out of the pulp all the seeds with the point of a penknife, and spread them out on a clean sheet of writing paper, at a distance from each other. Then for an hour or two the seeds were placed on a shelf in the sun, and covered with a piece of glass to keep them from being blown away. After they were dry, the seeds were placed in a wooden or paper box, with a little dry silver sand about them to preserve them till wanted for sowing. But all pods do not produce seed, for I have known seed-pods as large as Cherries cut open in which there has been no symptom of seed, whilst other pods from the same plant have contained thirty or forty, or even more. It is not difficult on the whole to obtain Fuchsia seed; but it is much better to sow wenty seeds obtained from carefully fertilised flowers than from 300 selected indiscriminately. The time to sow the seed will vary according to the means of protection at command: if it be a mild, open winter, the beginning of January is a good time; or, if the weather be wintry and ungenial, it may be delayed till February; but the sooner it is sown the better. It does best when sown in a propagating house, heated on the tank system, using shallow pans filled with a light soil, which should be flattened about ½ in. from the top of the pan, and on this surface the seeds require to be placed thinly, covering them with ¼ in. of finely-sifted leaf-mould or rotten turf, mixed with silver sand. The pans should then be plunged in the hot-bed up to their rims, after which a fine syringe should be used to slightly moisten the surface. Those who may not enjoy the advantage of a propagating house should delay the sowing for a few weeks until they have a frame heated by manure, plunging the pans to the rims in the same way; but in the case of a manure bed great care is required in covering at night, in giving air, &c., for if there have been any carelessness in making the bed, or the pans containing the seed have been put into the frame before the bed was properly ready, the seeds will germinate quickly, but will damp off as fast as they appear above the surface. For three weeks or a month under the most favourable circumstances, the best plan is to keep the surface of the seed-pan just moist, not wet, examining frequently to see that no insect-pests are at them. When the plants have put forth a second pair of leaves above the seed leaves, the strongest should be pricked out into small 60-sized pots. This gives room for the plants remaining in the seed-pans to grow, and some Fuchsia cultivators are of opinion that this is the time when the seedlings least feel the check of removal. When the seedlings are potted, the pots should be plunged in a moist bed, as it tends to keep the roots moist, and dispenses with the necessity for using much water overhead, from the excess of which the plants frequently damp off at the surface of the soil. Heat, moisture, and shade are required at this stage, and on no account should the plants be permitted to receive a check, for their early and successful blooming entirely depends upon their treatment in this early stage. As the plants make growth, the leading shoot should be neatly tied to a stake, and when the pots become filled with roots they should be shifted into 48-sized pots, and in these the plants may be flowered. There is a wonderful charm in watching the opening blossoms of seedling plants, even if they do not exhibit qualities above mediocrity; but that they frequently do, if due care have been taken to select proper parents.

R. D.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Composite plants are still very beautiful, one of the most distinct, perhaps, being Helianthus orientalis, which bears large golden-rayed flowers, having a black disc. Michaelmas Daisies, or shrubby Asters, also continue beautiful, the best which we have seen being A. pulcherrimus, A. bessarabicus, and A. linifolius, the last being one of the most floriferous in the whole group. A. Amellus is another stately-habited kind, bearing large delicately-tinted lilac-purple flowers on branches clothed with Centaurea-like leaves. The Vernonia noveboracensis is flowering freely in Mr. Ware's Nursery, as are also single-flowered orange and scarlet varieties of Dahlia coccinea, which will last in beauty until cut down by frosts. These are showy plants and valuable for supplying plenty of brightly-coloured flowers for large drawing-room vases, where they are most effective, grouped along with Asters, Anemones, and blue and white Bell-flowers. From Mr. Barr we have had a flowering plant of Iris ruthenica, an old species, but rather rare. Its flowers are very much like those of I. reticulata, except that the colour of the fall petals is purplish-blue and white instead of purplish-blue and gold. Mr. Barr has had the plant for years, but it has only now flowered for the first time with him, its normal time of blooming being April and May. The grassy leaves form tufts 1 ft. high or so, and the delicately-coloured flowers make their appearance in succession among the herbage. Mr. Ware has also sent us a beautiful bloom of a large-flowered Bearded Iris of a handsome lilac-purple colour. A few stray flowers still continue to make their appearance on Gentiana acaulis. The blue-flowered Salvia farinacea is also blooming freely, and is very pretty, as is also the hardy Californian Verbena montana, which has deep green Nettle-like leaves and bright carmine flowers. Chrysocoma Linosyris is still forming bold bosses of bright gold, and contrasts well with the blue and purple autumnal Asters. The bare soil in some gardens is now enlivened by the bright tints of Crocus speciosus and other late-blooming kinds, and a dark variety of Colchicum speciosum named purpureum deserves notice; it has the large, massive flowers of the type, but the colour is a more decided purple, and there are distinct, tesselated markings or chequers on the inner surface of the floral segments. The old scarlet Monkey-flower (Mimulus cardinalis) brightens up sheltered corners with orange-scarlet flowers, and the blue Forget-me-not-like flowers of Anchusa capensis may still be gathered, and no prettier addition than this could be made to bouquets or button-hole flowers at this season. A still more showy species (A. italica) deserves notice, being just now one of the most beautiful of all blue-flowered plants, and its flowers, although larger, closely resemble those of the prostrate Lithospermum, which is itself flowering freely on sunny rock-work. The blue and white Canterbury Bells are still in bloom, as is also the lilac-purple Statice Limonium. The white Zephyranthes candida, double-flowered Potentilla aurantiaca, and several varieties of Tradescantia virginica, are still beautiful on warm soils, as is also the orange-flowered Asclepias tuberosa, one of the most distinct of all the blooming perennials. The white-flowered form of Veronica spicata is now really better than earlier in the year, the pearly buds and white flowers contrasting well with the dark green leaves. A large-flowered blue Monkshood (Aconitum autumnale) is worth notice, flowering as it does after most of its congeners are past their best; Gentiana Andrewsi is still effective, its stems being clothed with amethyst-purple buds set in tufts of glossy green leaves. Among the late-blooming Yarrows the best is a bright rosy variety, which is now flowering in Messrs. E. G. Henderson's Nursery under the name of Achillea Millefolium rosea. Among the Bindweeds perhaps none are more beautiful than the Hedge Lily (Convolvulus Sepium), which rambles over hedges and bushes everywhere, and which should always find a place in the wild garden, or it might be used with good effect for draping outlying fences or old tree stumps by the sides of woodland walks; the pretty blue C. mauritanicus is also flowering freely on sunny borders. Gaillardia Telelmacqui is just now very rich and effective, its flowers being nearly 3 in. in diameter, and orange-yellow in colour, with a zone of vermilion around the purple-tinted disc. Rudbeckia purpurea, after having been in bloom for months, still remains one of the most stately and distinct of all herbaceous perennials. Scarcely less attractive is Cedronella cana, each of its shoots being tipped with purple-coloured buds and flowers, and Polygonum Brunonis is just now very pretty, forming flower-sprinkled masses a yard across on cool, rich soils. Late-rooted cuttings of Pansies and Violas are just now flowering very freely, the colours being peculiarly rich and variable. To the foregoing may be added the following, all of which are now in bloom, viz, Campanula rotundifolia, and its white variety, Erodium Manescavi and hybridum, Nymphæa tuberosa, N. alba, Aponogeton distachyon, Linum viscosum, Agapanthus umbellatus maximus, Gaura Lindenheimeri, Gladiolus purpureo-auratus, Sedum spectabile purpureum, Pyrethrum uliginosum, Alstrœmeria brasiliensis, Helichrysum ericoides, Coreopsis grandiflora, and C. Tripteris, Centaurea montana, Achillea Ptarmica fl. pl., Gypsophila repens, Veronica corymbosa, Tritonia aurea, Lupinus polyphyllus albus, Anemone japonica hybrida, A. alba, Scabiosa atropurpurea, Viola cornuta and its varieties. B.

SHINING-LEAVED MARIGOLD.

(TAGETES LUCIDA).

It is something unusual to find in a genus—in other respects consisting wholly of annuals, a good hardy herbaceous perennial—yet in this Marigold we have this remarkable exception. It is now in full bloom, a condition in which it has been during the past month. Its flowers are nearly as large as those of the Tagetes tenuifolia, erroneously called T. signata pumila, but any deficiency as regards size is more than compensated by the brilliancy of their golden colour and their arrangement in compact corymbs, which terminate each of the erect stems. The latter are from 12 in. to 15 in. high, and are sparsely clothed from the base with dark green lance-shaped entire blunt-pointed leaves—serrated as regards the margins, and slightly ciliated at the base. It is a native of the high districts in Mexico, where it was originally discovered, though doubtless not then introduced by Cavanilles, one of the pioneers in Mexican botany. When I say that it is perfectly hardy, I ought to state the conditions under which it is so. Like the Stevias, it forms a woody crown, subtended by a set of thick wiry roots, and like them, if to stand our winters, it must be so planted that their crown must be 5 in. or even 6 in. below the ordinary surface of the ground. This is even preferable to giving it a covering of some light protecting material in winter as the latter is liable to be forgotten, and even if remembered, it is not unfrequently scattered about by birds. I can strongly recommend this Marigold as a useful autumn-flowering plant. In a fine season it produces seeds very freely, and may thus be readily increased; or, failing seeds, the young spring, or rather early summer shoots, as it does not make its appearance until May, will strike freely. Seeds, however, yield the freest growing plants.

Hull Botanic Gardens. James C. Niven.

Agapanthus umbellatus out-of-doors in Winter.—This charming old plant is now flowering with us in open borders, where it stood all last winter unprotected, with the exception of a mulching of rotten manure, which was shaken round it last autumn.—R. Greenfield, *Warwick.*

Erythræa Muhlenbergi.—What I believe to be the real Erythræa Mühlenbergi is a worthless plant, which differs *in toto* from the advertised descriptions of it. The published figure purporting to represent this plant appears to be that of E. venusta (Gray), producing a rather large, handsome, Sabbatia-like flower, 1 in. to 1½ in. in diameter, with fine ovate, pointed divisions of a bright rose colour, the centre being yellow. In my plant the flowers are four-parted and barely ¾ in. across. Has any one raised from the seed sold for that of Erythræa Mühlenbergi a different plant?—Jemand.

The White Japan Anemone for the Conservatory.—At this season of the year most gardeners feel the want of flowering plants with which to adorn the conservatory; it is well, therefore, to look up all available plants to supply this deficiency. The white Anemone japonica may be easily and successfully cultivated in pots, and, by keeping it through the summer in a cool shady place, it will, if placed indoors in the autumn, yield a long succession of beautiful white flowers, if it be potted in good sandy loam and kept well supplied with water. Other varieties may, of course, be grown in the same way, but none are so beautiful as this.—S.

Large-flowered White Jasmine (Jasminum grandiflorum).—I can endorse "B.'s" remarks (see p. 285) respecting this fine autumn-flowering Jasmine. With me it receives only ordinary greenhouse treatment; it is plunged out-of-doors all summer, where it flourishes well, and the wood ripens much better than under glass, a circumstance which induces it to bloom more freely than it otherwise would. It is now flowering freely, and will continue to do so for some time to come. It has one fault, and that is—the flowers soon drop, both on the plant and when cut.—R. Greenfield, *Warwick.*

Large-flowered Funkia (F. grandiflora).

Lance-leaved Gaillardia (G. lanceolata).

Lilac-flowered Hardy Balsam (Impatiens glanduligera).

Naked-flowered Crocus (C. nudiflorus).

New Holland Daisy (Vittadinia australis).

European Cyclamen (C. europæum).

Alpine Erodium (E. alpinum).

Great-headed Centaurea (C. macrocephala).

Silvery Cineraria (C. maritima).

Hardy Crinum (C. longifolium).

Cornflower (Centaurea Cyanus).

Common Hairbell (Campanula rotundifolia).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

COTTAGE GARDENING.

Bush Fruits.

Although Currants and Gooseberries are commonly grown as low bushes, yet, with the exception of the Black Currant, they all submit readily to any form of training. When grown as low bushes on a clear stem 9 in. high, with the main branches springing from it at equal distances apart forming a sort of cup or basin, with the centre kept open by pruning so as to admit light and air, good crops are generally obtained. The chief objection to the low bush form, however, is the liability of the fruit to be spoilt by heavy rains splashing the earth over them when nearly or quite ripe. I have seen whole quarters damaged in this way in July and August by heavy thunderstorms.

In small gardens, where the most has to be made of the space, the pyramidal form is very suitable for Gooseberries. This style of growth can be secured as follows:—A stout stake 5 ft. or 6 ft. high should be driven into the ground nearly close to the young tree, and a central leader selected and tied to it, and if regulated in summer by thinning and stopping, and by shortening in winter, in the course of a few years a handsome, cone-shaped bush will be developed that will bear a large quantity of fine clear fruit. The Red and White Currants will not so readily assume a pyramidal outline as the Gooseberry; their wood is stubborn and erect, and the shoots are apt to split off if the training be delayed till the leaves have fallen. To obviate this a wire hoop, about 18 in. in diameter, should be fixed to the tops of three stakes, and the shoots should be drawn down to the horizontal position as they grow during summer.

Gooseberries and Currants may also be advantageously cultivated as espaliers from 3 ft. to 6 ft. high. Where expense is not the first consideration, the espaliers may be substantially erected, with iron standards to support and strain the wires. If planted in quarters or beds, they may be 5 ft. high and 4 ft. apart, and they make very neat and serviceable boundary lines to quarters of vegetables or by the sides of walks. In the latter case, if not more than 3 ft. or 4 ft. high, they may be planted near the edge of the walk, instead of Box or any other edging. The gravel may be placed close to the stems without the trees suffering any injury; but the edge of the border at the back of the espaliers should not be dug within 1 ft. or 2 ft. of their stems, except the trees require manuring, when it may be lightly forked in, and not disturbed, save by an occasional hoeing, till a similar application is necessary. If the young trees be planted 4 ft. apart, there will be space sufficient for six branches to each tree. When planted cut them down to the bottom wire, which should be 8 in. or 9 in. from the ground; select two of the best placed shoots to form the foundation of the future tree, and train them up obliquely at an angle of 45° or thereabouts; and when the growth is finished before the wood becomes ripe, lower the branches down and secure them to the bottom wires. If the trees have progressed well, the branches on the bottom wire will pretty well meet, and there should be no difficulty in the following spring in selecting a sufficient number of well-placed shoots to lead up vertically, and clothe the wires regularly and well in a comparatively short time. In espalier training, the young growth should be pinched or shortened back in summer, and then beyond shortening back a long spur there will be very little pruning required during the winter. With pyramidal or bush training a little more freedom of growth might be allowed, simply thinning out the young shoots in summer to let in light and air to the fruit, and at the winter pruning some well-placed shoots might be left to fruit almost their full length, whilst occasionally an old badly-placed shoot might be taken out and a young one left to replace it. In thinning the young growth in summer an eye should always be had to the shape of the trees, and those shoots that are not required for keeping the tree well furnished with bearing wood should be cut out; but any system of pruning or management that encourages a large annual growth, and leaves it all to be dealt with in the winter-pruning, is wrong in principle, and will soon lead to unfruitfulness. I have seen cases of this kind more than once where summer thinning had been neglected, but where a system of very close winter-pruning was followed the trees at last positively ceased to bear. The same thing is sometimes seen in the case of Grape Vines when from any cause their roots have been driven too far from the surface, and if they cannot immediately be lifted a crop can often be obtained by altering the system of pruning, and instead of continuing the short spur-pruning, adopt the short or long rod system, or prune to a good plump eye. In like manner the Gooseberry can be brought back to a bearing condition by leaving in more young wood. The fault of overpruning is, however, not common with cottagers, who usually err in the opposite direction, and do not prune at all. In small gardens, where plenty of fruit is required not only ripe for immediate consumption, but also to pick in a green state, it is best to adopt a medium course in pruning what are termed bush fruits. In summer thin out the young wood moderately when about 6 in. long, and in autumn, when the leaves fall and the eye can range over the branches and note their position and direction, complete the operation by cutting out all branches that cross each other, thinning out the centre and leaving a young, bearing shoot wherever there is a vacancy to fill up. By cutting to an eye pointing in the direction the future branch is required to take, the shape of the tree can be maintained without much training when it is once formed.

Black Currants bear altogether on the young wood, and therefore require rather different treatment. The bush form is better adapted for them, and they do best when allowed to grow quite naturally without any attempt at training, and in pruning well thin out the wood, taking out here and there a main branch from the bottom, and encourage a young shoot to occupy its place. That system of pruning that secures a good supply of well-ripened young wood all over the bush will be the most successful. The young wood should be left nearly its full length, the soft unripe points only to be cut off. Black Currants should be planted on the coolest, dampest spot in the garden, and if planted in rows 5 ft. apart, so that one row helps to shade the others, they will thrive all the better.

Currants and Gooseberries are so easily raised from cuttings that it is unnecessary to refer to any other method of propagation. Select the cuttings from healthy bushes, and they should be well-ripened shoots from 9 in. to 12 in. long; cut close under a joint, and remove all the eyes from the bottom upwards, except the three upper ones, which will form the future tree. Plant in rows from 4 in. to 6 in. apart, and about 3 in. or 4 in. in the ground, and 12 in. between the rows. They must be firmly planted, and in about two years they must be transplanted to some other position.

The Raspberry.

A cool, deep soil, suits the Raspberry best, and in all such positions it is a very paying crop; but almost any soil, however unfavourable it may be in its general characteristics, can by trenching and manuring be made capable of producing very good fruit. There are two systems of culture that I think are admirably adapted for the successful development of the Raspberry in small gardens. The first is to plant in rows 15 in. from plant to plant, and from 5 ft. to 6 ft. between the rows, and train the canes diagonally to espaliers 4½ ft. high; two wires will be ample, one at the top and the other about midway between that and the ground; drive in some stout Oak stakes 10 ft. or 12 ft. apart (having previously charred the bottoms to preserve them), and strain the wires on them. This is work that can be done by any labourer, and will not cost so much as placing a stake to every three or four canes when grown in clumps, and the fruit will certainly be finer and better. The other plan is to grow them in rows 15 in. apart and 4 ft. between each row, but not to train them at all, simply thinning out the young wood well in spring to admit as much light and air as possible, so that the canes may be strong and short-jointed. When the fruit is gathered cut out all the old canes that have ceased bearing, and still further reduce the number of young canes, leaving only enough to produce a crop the following year. Success will be in proportion to the way in which these details are carried out, for almost everything hinges upon having sturdy, short-jointed canes. In February cut back the canes to 3 ft. and mulch with manure. As Raspberries are surface-rooting plants, it is not advisable to dig amongst them.

On dry, porous soils it will not be necessary to disturb the surface at all if it be mulched, but very retentive land, if not stirred, sometimes becomes sour and unwholesome after much treading, and should be forked up in autumn to aërate and sweeten it. The autumn-bearing Raspberries will succeed in a somewhat drier position than the summer-bearing kinds. They are, perhaps, not much grown in small gardens, but they are very useful to mix with late Red Currants in a tart, or for an occasional dish for dessert. Their treatment is different from that of the summer-bearing varieties, inasmuch as they are cut down close to the ground every autumn, the effect of which operation is to induce the canes to throw up a new growth from the roots in spring. This new growth should be well thinned out, leaving only the strongest shoots for fruiting.

The Strawberry.

A deep unctuous loam is the best soil for Strawberries, and an open situation, away from the shade of trees or hedges, is the best position for the main crop. A few early fruit may be obtained from the foot of a south wall, or from the south side of a specially prepared ridge, if the plants be well watered in dry weather, until the fruit begins to ripen, and also after it is gathered, should the plants be intended to remain for another year. The Elton or Frogmore Pine may be planted in a north aspect for a late crop. This, however, merely extends the season of bearing, and does not affect my first proposition, viz., that the bulk of the crop should be grown in an open airy situation. In preparing the land for Strawberries, if it be of an inferior character, let it be bastard-trenched, that is, mark out the ground in the same way as for ordinary trenching, and in opening the first trench—which may be from 2 ft. to 3 ft. wide—take off the top spit only and wheel it across to the opposite side, where it is intended to finish; then put a layer of manure on the top of the second spit, and break it up thoroughly, mixing the manure with it with a steel fork. The top spit of the second trench should be thrown on the top of the first, and the bottom manured and forked up deeply in like manner. In this way the best soil will remain on the top, whilst the bottom will be manured, loosened, and permanently improved.

Strawberries are surface-rooting plants, and it is only ground that has been often trenched and is in thoroughly good condition that will be suitable for their healthy growth after the top soil has been buried. A firm soil is absolutely necessary for this kind of fruit; therefore the trenching should be done some time before planting takes place in order to give the land time to settle. In small gardens where it is necessary to make the most of the land, the runners should be secured early in July, and planted about 6 in. or 8 in. apart in a nursery bed, there to remain during the winter. They will make as much growth in such a position as if finally planted out, and then the land intended for the new Strawberry plantation can be thoroughly stirred and exposed during the winter, and in March, when the surface is dry, it can be leveled down and made firm by treading or rolling. The plants should be lifted with good balls to their roots and carefully planted, being thoroughly soaked with water, with a little dry earth drawn up round the plants with the rake to check evaporation. In cold situations this plan will be found to answer better than if planted in August. A dressing of thoroughly decayed manure can be spread over the surface and lightly forked in during the preparation of the ground just previous to planting. A sprinkling of soot and salt will also be beneficial, especially if the land be much infested with slugs or snails. Plant in rows 2 ft. apart, and 1 ft. between the plants in the rows. After the first crop of fruit is gathered every alternate plant should be pulled up, leaving them finally 2 ft. apart each way. Some of the most practical growers of Strawberries differ in opinion as to the length of time a Strawberry plantation should occupy the same spot, but local circumstances should always have some weight with every cultivator in coming to a decision as to the time of planting a new bed; anyhow, Strawberry beds may profitably stand three years in almost every kind of soil or situation. It is important to mulch the ground between the plants early in the spring with long, fresh stable litter, if it can be obtained; if not, use the best substitute at hand. This mulching is beneficial in several ways: it keeps the fruit clean, checks evaporation from the soil, and if put on early helps to shelter the plants during a cold spring. Some care should be exercised in selecting the runners from prolific-fruiting plants only; in fact, all others should be pulled up as soon as their true character is discovered: in this way only can Strawberries be kept from deteriorating.

It is a common plan with first-class cultivators to peg the early runners into small pots filled with rich soil, and supply them well with water till they are well established, at the same time stopping all growth beyond the pots, so that only one plant is attached to each runner. Good plants may also be obtained for making new plantations by laying down little mounds of rich earth and pegging a runner on to each mound, or pressing it down on the new soil and keeping it in position by a small stone. In the case of a plantation that is not intended to be destroyed all the runners should be removed as soon as possible after the requisite number has been obtained, as they only weaken the plants if allowed to continue thereon. A few of the old, discoloured leaves may be cut off at the same time, but to mow off all the foliage (as is sometimes done) is a barbarous practice. Top-dressings of manure may be given to Strawberry plantations at any time during autumn, winter, or spring if really needed, and on dry, porous soils this will be more necessary than on lands of better quality. Some discrimination is necessary, however, for although Strawberries are gross feeders, yet, if over-manured, they have a disposition to run too much to leafage, and rank luxuriant growth is as inimical to fruit-bearing in Strawberries as in any other kind of fruit-bearing plant or tree.

General Remarks on Pruning Fruit Trees.

There are but few operations in fruit growing that require so much thought and study as pruning, that is, if it be intended to carry out rationally this important operation. If it be true that every distinct variety of fruit tree has a style of growth peculiar to itself, the importance of taking into consideration their individual characteristics in dealing with them becomes self-evident. Judicious pruning will always be necessary in first-class fruit culture, but the term judicious may, to different minds, convey different meanings. Where summer-pruning has been systematically performed there will be little to do in winter beyond shortening back a long spur, removing a dead one, or thinning those that are too thickly placed, and cutting back the leaders. In the case of young trees only the unripe points of the leading shoots should be shortened back, unless the trees are scantily furnished. In pruning old neglected trees there is a temptation, for the sake of uniformity of appearance, to saw out all old spurs, especially in the case of wall or other trained trees; but this is work that should be done very gradually and spread over several years, that is, if the trees have been bearing fruit principally on the old spurs, which is generally the case. I have known instances where for the sake of neatness old spurs have been removed from old Pear and Apple trees, and the crop of fruit lost for several years in consequence. The old spurs seem to have arrested the sap, and to have converted what would otherwise have been wood-buds into flower-buds, and when they were removed, the pent-up sap rushed into soft watery spray, and the trees became practically barren till the roots had been somewhat shortened. Neatness and uniformity in a fruit tree are doubtless very desirable, but the main object of the cultivator should be to obtain plenty of fruit of good quality, and to accomplish that result, there must not be an excess of pruning with either knife or saw. Cutting out large branches ought seldom to be necessary even in large standard trees, if the trees had been properly managed, and the thinning gradually attended to when the branches were small. There are two main objects sought to be obtained by pruning. The first is to build up a well-balanced, healthy, vigorous tree in as short a time as possible; and the second is, in conjunction with the first, to encourage the production of fruit-buds, so as to bring the tree into a bearing condition as early as is consistent with its permanent well-doing. A well-balanced tree can easily be secured by heading back at the autumn pruning any branches not sufficiently furnished; but fertility is best obtained without much use of the knife. Disbudding or thinning out the young growths early when the trees are producing too much soft spray, should be followed in due course

by a gradually progressive pinching back through the summer, and every tree should be treated separately, without any reference to its neighbours. Root-pruning is a valuable expedient to adopt in the case of trees excessively vigorous, that are not easily subdued by any other means; but with all trees of a manageable size, the object sought is best attained by digging the tree up carefully and replanting it. This usually gives sufficient check to moderate the growth, and bring the trees into a bearing condition. October and November are the best months for this operation, and also for the shortening back of a few of the roots of any large, strong-growing tree that may be too large to lift and re-plant. In nearly all cases, if half the roots be shortened back, the check given will have the desired effect, there being a danger of permanently crippling the tree should the roots be too severely pruned. In some cases opening a trench on one side of the tree at about 3 ft. from the trunk, and working under the ball so as to get at the roots that descend perpendicularly, will be sufficient; when those are severed, the hole may be filled up again and the soil made firm.

Protecting the Blossoms of Fruit Trees.

Cottagers do not generally pay much attention to the protection of fruit tree blossoms; but it nevertheless has an important bearing on the success of the fruit crop, and there are cheap and simple materials within the reach of all and easy of application, which are in the majority of seasons as efficient as more expensive and elaborate protections. In the case of pyramidal or espalier-trained Pears, Plums, Apples, or Cherries, small wisps of straw, tied here and there amongst the branches, allowing the long ends to float in the air, will be a great protection from spring frosts. Most people may have observed that trees standing on rather an elevated spot, where the least movement in the air would be felt, have escaped injury, when others, in apparently a more sheltered position, have suffered severely. In the same manner, on a frosty night, anything that tends to keep the air in motion round the blossoms protects them more than a covering affording an immovable shelter, and thus the light motion of small bunches of straw secured only at one end is beneficial. Rushes, the feather ends of Reeds, or the common Brake Ferns may also be advantageously employed in the protection of fruit blossoms; while small sprays of Yew or Spruce Fir, or any other evergreen tree or shrub, where available, will be useful in helping to secure a crop of fruit. I have here a south wall, about 100 yards long, planted with Peaches and Apricots, and for the last eight years all the protection the trees have received has been from small sprays of Yew being secured to the branches with the feathery ends projecting over the blossoms. We have trees of the same kind more heavily covered on other walls, but, taking the average of seasons, the produce of the trees protected with Yew sprays only does not compare unfavourably with that of the others. After a careful examination of the subject, I have arrived at the conclusion that if the trees be not weakened by over-cropping, a very moderate amount of protection will in the majority of seasons suffice; but unfortunately, every few years there comes a season when the weather is so severe that scarcely any protection short of a glass roof and a hot-water pipe will secure a fruit crop.

Growing Fruit for Profit.

Where profit is the main consideration it is better to plant only such kinds as are known to do well in that particular neighbourhood, and there are a few kinds that may be planted with safety everywhere. I would rather plant 100 trees each of Lord Suffield Apple, Williams' Bon Chrétien Pear, and Victoria Plum, than trust to a larger number of kinds. Many sorts that would be profitable when the trees were large yet do not bear much in a young state, and whilst the Grass grows the horse might starve. As a rule, early kinds of fruit pay the small grower better than late ones; they come earlier into bearing, they can be gathered and marketed without storing and without loss, and though undoubtedly late-keeping Apples and Pears are worth more than early kinds, yet there is a good deal of trouble involved in keeping them; a good fruit room would be required, and under any circumstances there would always be some waste.

Fruits for Small Gardens.

Apricots.—Moorpark, Hemskirk. Apples.—Alfriston, Manks Codlin, New Hawthornden, Fearn's Pippin, Dumelow's Seedling, Court Pendu Plât, Lord Suffield, Waltham Abbey Seedling, Cox's Orange Pippin. Peaches.—Early Beatrice, Royal George, Alexandra Noblesse, Bellegarde. Nectarines.—Elruge, Violette Hâtive. Pears—*Espaliers or Pyramids.*—Beurré d'Amanlis, Williams' Bon Chrétien, Louise Bonne of Jersey, Beurré de Capiaumont, Duchesse d'Angoulême, Beurré Diel. *For Walls.*—Glou Morceau, Marie Louise, Passe Colmar, Chaumontel. *Standards.*—The Hazel Pear will be found a most prolific and profitable kind. Plums.—Rivers' Early Prolific, Green Gage, Goliath, Diamond, Victoria, Golden Drop, Damson. Cherries.—May Duke, Late Duke, Bigarreau Nepoleon, Morello. Gooseberries.—Red Warrington, Champagne, Crown Bob, Whitesmith, Green Ocean, Roaring Lion, Early Yellow. Currants.—Red Dutch, Red Grape, White Dutch, White Grape, Black Naples. Strawberries.—Keen's Seedling, Vicomtesse Héricart de Thury, Dr. Hogg, President, Sir C. Napier, Elton Pine. Raspberries.—Red Antwerp, Yellow Antwerp, Fastolf, Carter's Prolific. Grapes—*for Open Walls.*—Royal Muscadine, Esperione, Black Hamburgh, the latter in sheltered situations. *Vinery.*—Black Hamburgh, Foster's Seedling, Alicante, Buckland Sweetwater, Madresfield Court, Black Muscat.

I have designedly made these lists select, including only such kinds as I have found do well in widely different situations.

E. Hobday.

ERADICATING MILDEW FROM VINERIES.

Last year I had some trouble in keeping mildew down in a large Vinery in which Muscat Grapes are principally grown. The Vines broke weaker than usual owing to their roots being lifted, and put in a fresh border, and the spring and early summer months being very wet they became badly affected by mildew. As soon as the wood had thoroughly ripened, and the foliage fallen off, I had all the loose bark peeled off the old rods, which were afterwards brushed over with a hard brush. Water was then applied to the old and young wood as hot as the men could bear it, and every eye and crevice were washed over with it. Before forcing commenced the Vines were again painted over with the usual composition which is annually applied to them, namely, soft soap, sulphur, quicklime, and a little clay to give the mixture consistence, and to make it stick. This year the Vinery has produced the largest crop, and the finest coloured Muscat Grapes I have ever grown, and not a speck of mildew has appeared in the house. Some may think the amount of labour involved in this case excessive, but no labour can be too great to conquer so insidious a foe as mildew. When taken in time, sulphur dusted on the infected bunches or foliage will keep it in check, but it is liable to occur again another year should the season be dull, especially where the ventilation and heating of Vineries are deficient. I have no great faith in sulphur painting, or sprinkling sulphur on the pipes or flues to keep down mildew when once it has appeared in a house; the best plan is to thoroughly dress the Vines in the autumn or winter months.

Welbeck. William Tillery.

The Phylloxera in Germany.—According to a letter from Mr. J. B. Schnetzler to M. Dumas, and laid before the French Academy at one of its recent sittings, M. Nördlinger, a professor of the Academy of Hohenheim, in Wurtemburg, has been making a series of observations on the Phylloxera. On July 5 and 6 it was discovered that the Vines in the neighbourhood of Stuttgardt had been attacked in three different localities, two being in the royal villa of Wilhelma, and the third in the royal villa of Berg. The Vines infected are all of American origin, and were imported some twelve or thirteen years since either direct from the United States or through France. The Phylloxera preys on the roots, and above all the rootlets of these Vines, producing nodosities as on those of European origin. As a large section of the French wine growers look upon the use of American Vine stocks as being their only hope of eradicating the disease, it may interest them to know that the following species have all been attacked by Phylloxera in Wurtemburg:—Bullis (?), Catawba, Concord, Delaware, Diana, Hartford Prolific, Lasca (?), Rebecca, Rogers' Hybrid, and To Kalon. Several plants of the Isabella variety, whose roots were intermingled with those of the infected Concord, were quite exempt from the pest. According to the latest reports, the ravages of the Phylloxera have been confined entirely to the royal gardens, although there are numerous vineyards within the distance of half a mile.

THE CAPE PONDWEED IN AND OUT OF WATER.

The Cape Pondweed (Aponogeton distachyon) has hitherto been considered a purely aquatic plant, but, according to an interesting article on the subject by M. E. A. Carrière in the "Revue Horticole" for September 1, it may by certain treatment be transformed into an ornamental land plant. M. Carrière first questions whether all so-called aquatic plants cannot be made to thrive on land. It is certain that these plants, inhabiting, as they do, a certain medium for a prolonged period, contract habits with regard to that medium, so that when they are removed from it they suffer more or less, and do not acquire the qualities which they otherwise would have done had they been left in it. Nevertheless, like all other plants, they are to a certain extent plastic, and may, according to their nature, be made to submit to more or less extensive modifications. In the neighbourhood of marshy places, we continually find that plants which, as a rule, live in the water, will live equally well on the dry land as soon as the droughts of summer necessitate their so doing. In this case the plant, living in a new medium, parts with certain characters which have now become useless to it, in order to take others more in accordance with its new conditions of life. The Jussiæa grandiflora, the Water Buttercup, the Water Arrowhead, the Caltha, and several others furnish excellent examples of this. The plant under consideration, which not without reason has always been considered aquatic in its character, presents several analogies with the species we have just mentioned, but is more interesting from a horticultural point of view, seeing it becomes an ornamental plant of great merit, as may be readily seen from fig. 2. Although the Aponogeton is well known, it may be interesting to compare the characteristics possessed by it both as a land and water plant. In its natural habitat, as it is shown in fig. 1, the flower and leaf-stalks frequently grow to a great length, just in proportion, in fact, to the depth of the water, and the strength of the stream in which it is growing, in order to spread its leaves on the top of the water. The leaves are flat, narrow, and oblong, with the ends rounded off. They are often as much as 10 in. long by 2 in. broad. They are very smooth and polished, of a beautiful green on the upper side, and of a reddish-green beneath. The inflorescence is divided into two opposite portions at the base, hence its specific name, distachyon. The flowers, which are delicately scented, and formed of alternate scales, are at first slightly tinged with pink, but afterwards become perfectly white, and finally of a greenish hue. The seeds are bottle-shaped, and are often over ½ in. in length, and fall to the bottom of the water as soon as they are ripe—it is useless, therefore, to try to obtain seed. The tubercles, which are shown in fig. 3 (p. 334), are at first simple, and drawn out to a point at the base, but they soon become truncated and ramify, so as to form a number of tubers. The skin, which is usually brown, sometimes takes a deep violet tint. The flesh of the tubers is snow-white, granular, and very starchy, and is never fibrous. The whole of the preceding description applies to plants growing in rivers, lakes, marshes, or ditches, in which they thrive almost without any care being bestowed on them. The method employed by M. Carrière in changing the habitat of the Aponogeton, so as to transform it into an ornamental plant, was comparatively simple. Towards the end of August he took a pot about 7 in. in diameter, and, having first provided for its drainage, filled it with peat-mould broken into small pieces, a little fine soil being sprinkled on the top of all. In this was planted a tuber similar to one of those shown in fig. 3, but smaller. The pot was then placed in a well-ventilated frame, and watered frequently, covering it up with broken pots to keep in the moisture. Towards the middle of October the plant, which had begun to bud, was transferred to the propagating-house, where it received the same treatment. The buds gradually increased in size, throwing out petioles which, instead of leaves, bore peculiar appendages resembling wings. Shortly after, the flower-spikes made their appearance in the form of cylindrical shoots of a deep, shining red, each terminated by a pointed button of the same colour, and brilliantly polished like all the other parts of the same plant. From the middle of November onwards the plant was covered with flowers, and continued to throw out bloom without intermission until the end of March. Towards the middle of January a few well-formed leaves began to make their appearance, and bore all the characteristics of those which the plant develops in its natural condition, differing only in their dimensions, which were very much smaller. With the exception of the flowers, which attained their full size, all the other parts of the plant were much shorter and smaller than usual, so that the whole mass of vegetation presented the comparatively compact appearance shown in fig. 2. M. Carrière looks upon this method of culture as merely tentative, and thinks that by modifying it still better results might be obtained; but this of course, is a mere matter of experiment. Although the Aponogeton distachyon is a native of the Cape of Good Hope, it is perfectly hardy throughout the coldest of our winters. Besides attracting our admiration by the beauty

Fig. 1.—The Aponogeton as a water plant (one-sixth its natural size).

Fig. 2.—The Aponogeton cultivated in a pot in the open air.

and odour of its flowers, and the polished green surface of its leaf, the Aponogeton has another quality which may one day cause it to rank amongst our useful plants. The thick tuberculous roots contain large quantities of starch, and when cooked and sliced or pounded, they are greatly relished by pigs and poultry. At the Cape of Good Hope the flowering tops are used as a pickle, and as a substitute for Asparagus, and the roasted tubers are considered excellent eating by the colonists. As for its culture in water, it is simply necessary to place the tubers in the mud at the bottom of a pond, lake, or river, and leave them to themselves. To grow them on land from seed it is necessary to cut off the fruit just before it is ripe, and cover it over lightly with damp earth, which must be kept in a constant state of humidity. These plants germinate somewhat quickly and soon begin to throw out filiform shoots, greatly resembling those of small Onions. They may be also sown in a pan of water, the bottom of which is covered with a layer of earth to imitate the mud at the

Fig. 3.—Rhizome of the Aponogeton distachyon (one-third its natural size).

bottom of a pond. Those who wish to cultivate the Aponogeton can, therefore, clearly do so either in ponds, lakes, rivers, or in pots; while, however, calling the attention of horticulturists generally to the Aponogeton as an ornamental pot plant, we would also remind them that, throwing out an abundance of flowers during the winter, they ought to be valuable for bouquets, particularly from their odour, their singular form, and, above all, their whiteness—white flowers being an exception amongst the few which we possess during the winter months. C. W. Q.

The Chusan Palm.—In looking over a back volume of The Garden I am reminded of my neglect to thank Mr. Wildsmith for his reply to my question in regard to the flowering of this Palm. Strange to say, the same plants have not flowered since 1874, except one small truss on the female plant a few weeks ago, and I attribute this to the treatment they have received, showing, in my opinion, that in order to flower this, like all other plants, its native climate must be imitated. The year previous to the blooming of the plants they were wintered in a very cold house, in fact, almost a shed, the temperature falling as low as 15° Fahr., and from this up to 32° for two or three weeks. They were put out into the open air early in April, and by May both of them were in full bloom with three immense bunches on each. The two following winters they were kept in an intermediate or almost stove temperature (the former place being occupied as a retarding-house for specimen Azaleas), and grew and made fresh leaves all the season, the heating having the same effect as upon Azaleas or other plants, by which system of treatment they were allowed no rest. It would therefore seem necessary, in order to secure blooming, that this Palm should be wintered in a cool house with the temperature sufficient to check growth during the resting season. When it is grown in the open air, as in some parts of England, this answers the purpose; but when the winters are very severe they should be removed to the house. Its brilliant golden flowers are so handsome, and its immense clusters of deep blue berries so very ornamental, that it will be worth taking all the requisite trouble to secure both.—C. M. Hovey.

HARDENING OFF PLANTS.

No expression is oftener used in gardening matters than the above, and it is used as if everybody understood all that it meant. But this is not so by any means. The advice to harden off such and such plants before putting them out is very differently interpreted by different individuals. One would hardly think, perhaps, that the expression would be taken to mean that he was to turn his bedding plants out at once into the open air from their nursing pots in April or May, or that he was to transfer his early started Peas or Potatoes from the hot-bed to the open ground; but that such is the case cannot be denied, nor need we be surprised at it in the case of many who may be diligently gardening in their own sphere without much gardening knowledge or experience. Let us see, then, if we can give a few practical illustrations on the subject of "hardening off," and explain what it means. The term, as a rule, denotes the practice of preparing plants for enduring exposure, or a colder temperature, and very often it means "ripening off," which is much the same thing in some cases. We talk, for example, of hardening off pot Vines, hardening off bedding plants, hardening off plants for the conservatory, or of hardening vegetables that have to be planted out, &c. These are oft-used expressions which are more familiar to readers than well understood. Every one knows, or should know, that it is not a wise plan to step out of his winter tweeds and flannels into his summer garments all at once, but that the transition should be accomplished by degrees. Well, then, hardening off plants means something very nearly the same, only that in the case of the latter the risks are not so great, plants having quicker recuperative powers than human beings, and we need not therefore be quite so particular. Still, though a plant may not be destroyed by sudden exposure to the cold, in all probability the prospect of a crop of fruit, or the prospect of flowers for a season would be destroyed, and so far the object of growing them would be lost. Let us take pot Vines as an example. Perhaps there is no plant or shrub that is so often injured through injudicious hardening off or ripening. Thousands are sold to customers at this season for forcing purposes, and many of them are probably only ripened two-thirds of the way up; and just as likely when the customer receives them, he nails them up against the open wall, or at most gives them the shelter of a cold house, where they remain till they have shed their leaves. This they soon do if the nights be cold, or if the frost touch them, and it is then concluded they are ripe and fit to prune; but, the truth is, the leaves have only been killed off, and the Vines are not riper than they were before. It would have been just as well to have cut off the unripe portions at the first. It must never be concluded when Vines, which are, perhaps, described as perfectly ripened by the seller, arrive from the nursery that they are quite ripe. We never got a dozen thoroughly matured canes from the nursery that we can remember. As soon as they arrive they should be examined, and if the wood be not quite brown and hard to the top, and the eyes also (which are the last to turn brown), they should be housed and treated to a rather dry and airy but maximum Vinery temperature, till they are ripe.

When a Vine is just getting brown in the wood it is only in the mid-season of its growth. In bearing Vines the wood is usually brown and hard, particularly in the Hamburghs and Muscats, before the fruit begins to colour, and when the Vines have still some two or three months to grow before it is considered advisable to lower the temperature very much, or to harden them off by throwing open the house. This is a fact worth remembering by those who turn their pot Vines out into the cold as soon as they perceive that the bark has turned its colour. It is notorious that nearly as many cultivators fail as succeed in fruiting pot Vines, and the cause is oftener ill-ripened wood than anything else. Nursery-grown pot Vines are usually strong enough; the only difference between them and home-grown plants is that the latter are better ripened, and consequently always fruit better. When pot Vines are ripe to the tops of the canes, and only when the side laterals are partially brown is it time to begin bordering off; and this must not be done by turning the plants summarily out-of-doors, but by gradually reducing the temperature approaching to that of a cool greenhouse, after which the plants may be turned out against a warm wall to finish off without injury. In the case of orchard-house trees, such as Peaches or Apricots in pots, it is rather different. These are never subjected to such high temperature as the Vine, and they may be turned out of the house as soon as they have ripened their fruit, unless they are very late. But trees that have ceased fruiting by July or August are better out-of-doors in front of a warm wall or in some sheltered situation.

Early Peaches and Nectarines are apt to suffer if left to roast under glass throughout the autumn. It is such treatment more than any other that causes the buds to drop in the spring. With very late Peach trees, in cold Peach cases for example, the great difficulty usually is to get the shoots in a thorough state of maturation. When the fruit is not gathered before September or October, the wood will

be proportionally late in ripening, and it is then of the greatest importance to make the most of every glimpse of sunshine that occurs. The length the shoots have to be left at pruning time and the progress of the trees depend entirely upon the extent of young wood which can be matured, for all that is not ripe will have to be removed. In unheated Peach cases it is not, however, possible in some situations to get the shoots ripe to their extremities, do what one may; but the utmost exertions should in all cases be made. Usually, while there is any fruit to gather, the structure is kept as cool as possible, in order to prolong the supply, and when this is done the work of ripening the wood commences, or rather is continued at a brisker rate. True, some people in ignorance continue to keep the ventilators wide open day and night, under the impression that they cannot give too much air at such time; but this is a great mistake. Heat is first wanted, and the ventilators must be regulated to suit the temperature. The best way, when all the fruit is gathered, is to thin out the shoots where required, giving each plenty of room to remove all laterals and superfluous foliage—and tie the shoots into the wall; this will let the light into the trees. Water should then be sparingly given to the roots, if it be late in the season, but it must not be withheld to the extent of parching them while there is foliage upon the trees. There should be no damping or syringing, and the temperature may be allowed to run up to 80° whenever possible by sun-heat, with a free circulation of air throughout; but a very little aperture back and front will be sufficient, while opening the shutters wide would reduce the temperature too much. In fine, warm weather, of course, there can never be too much air given, night nor day, but shutting up early is the watchword when frost or cold is expected. This treatment must be continued till the leaves fall naturally off the trees, after which not much can be done to further maturity.

We now come to speak of hardening off plants, that is, flowering plants for the conservatory or flower garden. A permanent floral display in the conservatory during the winter and spring months, when many of the plants have been forced into flower in high temperatures, depends much on their previous treatment, and whether that structure be kept cool, or at a comfortable temperature of 50° or 55°. When Roses, Rhododendrons, Azaleas, Deutzias, Spiræas, Hyacinths, Crocus, and similar subjects are forced for the conservatory, they require hardening off, just the same as bedding plants before they are planted out. When a Rose, for example, is at once transferred in full flower from the forcing-house to a cold greenhouse, both flowers and foliage droop, and the former also lose their scent and soon perish, while the buds which are still unopened turn yellow and never come to perfection. This is a great annoyance to people who force Roses, and who have no conveniences for hardening off the plants, if only for a day or two, before taking them into their cold rooms or conservatory. When the first buds are pretty well expanded the remainder will be well forward, and in order to get all out in good condition it is not wise to subject the plants to a lower temperature than 50° at night, with a slight rise during the day; so treated they will continue to open their flowers, and they will be of better substance than those pushed on in a high temperature. But the flowers are not the only consideration in Rose forcing; the wood and foliage must be kept in good health, or the prospect of Roses during another season will be very slight. In this respect Roses are about the most abused plants with which we are acquainted. After they have ceased flowering, they are generally placed anywhere in hot or cold houses, and before the frosty nights are fairly gone, they are put outside behind a wall, by which time they are the most miserable objects imaginable. It is this kind of treatment and nothing else which ruins pot Roses in most establishments. The plants want growing on and ripening properly in a summer temperature after they have done flowering, and should only be put out-of-doors when this is accomplished. Those fine specimens we sometimes see at exhibitions are treated in this way, and well they repay the attention they receive. Usually, however, the immediate object in flower forcing is to save the flowers on the plants as long as possible, and in the case of Roses, Deutzias, and similar flowers that have to make their growth afterwards, this can be done without injury provided a season of growth be given afterwards; but in every case it is important to partially harden the foliage and blooms, if only for a day or two, in an intermediate temperature. There is no doubt that a comparatively cool temperature keeps the flowers from fading, but they must be prepared for it, or the opposite will be the result. We have seen Lily of the Valley, Roman Hyacinths, Spiræa japonica, Dielytra spectabilis, and such tender subjects ruined in two or three days by being introduced to a cold house from a warm Vinery; whereas it is well known that all of these should last in good condition for two or three weeks if hardened off previously. We come now to bedding or half-hardy plants. There is no kind of stock which puzzles the cultivator so much as these in the spring, from the difficulty he finds in preparing them for enduring the cold nights and keen winds of May and June. Generally every house is crowded with plants, and they have to be turned out of warm houses into the open air at once. When lights can be spared for covering in frosty or windy weather, there is no difficulty. Winds are worse than frost, for they sap the very life out of the tender foliage in a few hours. Our plan is to select the most sheltered corners we can find for those subjects for which there is no pit room. Here the plants are set as thickly together as possible, for they afford admirable shelter to each other. A frost that would kill Geraniums to the ground if they were set 9 in. or 12 in. asunder, will simply blister the tops when they are crowded together; this we have proved many a time. In cold, windy days there is nothing better for a covering than short straw or dry litter. Thinly scattered over the plants, it effectually protects them from the wind without too much shading, and may remain on for a week or more, and if frost come in a severe form, a little more may be added. We have had thousands of Geraniums which were turned out of Vineries and second early Peach-houses, covered in this way for nearly a fortnight in cold, frosty, and snowy weather. We turn all our bedding stock out by the second week in May previous to planting out, let the weather be what it may.

As regards those vegetables that are begun in heat, the best plan is to start them in good time rather than force them on quickly, and then they will not require much hardening off, or, at most, but two or three days. Spring Cauliflowers, Peas, or Potatoes, make but poor returns if they have been started in a strong heat. Cauliflowers are particularly sensitive in this respect; and if they do not go off at the neck before they are fit to plant out in the quarters, they are almost sure to button afterwards. No vegetables should be started in a temperature above that of a greenhouse. Chef.

An Arctic Woodland.—Popular impressions are often far from the truth, and in regard to the Arctic regions, they are undoubtedly so. A treeless land would be, in the opinion of most people, the idea which would suggest itself in regard to the regions in question. Yet this, though true, is not all the truth. Within the Arctic circle are found trees often forming considerable though stunted forests. In Eastern Siberia Pines and other trees come down almost to the water's edge; while over all Western Siberia, Arctic Russia, and Lapland the tree limit runs within the Arctic circle; trees extend even to the North Cape. In Greenland we find, even in the most southerly parts of it, no herbage more worthy of the name of tree than the stunted Birch, which, in the more sheltered valleys of that country—equally inappropriately named with Iceland—attain the proportion of little shrubs; and it is not until we come to the milder latitudes of the Pacific that the tree line, which had described a southerly curve in the cold regions of Central North America, again rises to the north, and until we reach the shores of Behring Strait we find nothing which we can dignify by the name of trees. . . . The wooded banks of the Yuken touch the Arctic circle, and forests of White Spruce are found on the Noatak, a river which falls into Eschscholtz Bay, which infringes on the Arctic circle. In Lapland the Spruce ceases at about the 68th parallel, and the Scotch Fir at the 69th; but in Norway, owing probably to the warm Gulf stream, which sweeps along the coast and into the Arctic Sea—at last as far east as Novai Zemlai—we find forests of Scotch Firs, 60 ft. in height, as far north as Altenfjord, and Birches, about 45 ft. high, in an equally northern latitude. In latitude 70° 28′ the hardy Scotch Fir still maintains its ground, though the Spruce fails a degree or so further south. In the vicinity of Hammerfest, a well-known Lapland town, in latitude 70¾° N., there are dwarf Alders and Aspens, Bird Cherries, Rasps, and Currants. In the Scandinavian peninsula, probably also owing to the warmth which a sea, unincumbered, and in addition laved by a current of a higher temperature, affords, Barley is cultivated as far north as the 70th parallel, the latitude of Disco Island on the Greenland coast, and was up to the 65th "in sheltered valleys, where rocks and cliffs reflect the sun's rays with much power."

Tomatoes v. Wasps.—Having read that a few plants of Tomatoes would prevent the inroads of wasps, I determined this year to try the experiment and accordingly placed about twenty large healthy Tomato plants in my orchard-house and several more in a Vinery. I regret to say that the plan has proved a complete failure, the wasps have been as numerous as ever, and I have this day cut two bunches of Grapes with many berries completely eaten by these destructive insects. I should like to know if others of your readers have been equally unsuccessful.—Foiled.

New Material for Paper-making.—The inner bark of the Baobab tree is found to furnish an excellent fibre for the manufacture of paper, and, unlike other trees, the Baobab does not appear to be injured by the removal of the bark, which soon grows again, and, it is reckoned, may be removed every eight years. The bark after being beaten is dried in the sun and done up in bundles for exportation. The bark of young trees produces the best paper.

THE LIBRARY.

"SCIENCE, LITERATURE, AND HISTORY PRIMERS."*

This series of Primers, written by the foremost men of the age in every department of science and literature, is a most successful effort to convey the fullest information on all those subjects which are now-a-days included in a liberal education in the most condensed form, and at the lowest price. These little manuals—which, although they are called Primers, are fully worthy of the study of adults who were educated before science teaching was as general as it is fast becoming—contain on an average 130 pages of closely but legibly printed matter, interspersed with illustrative cuts. The majority of them are written clearly and succinctly, and convey an amount of information that seems incredible when we consider the size of these little books. Amongst the best of the series are Professor Geikie's "Geology and Physical Geography," which are written in a clear, brilliant, popular style, which carries the reader irresistibly from fact to fact until he finds himself fairly launched on a sea, of whose existence he has been hitherto barely conscious. The same praise may be extended to Mr. Lockyer's "Astronomy." Professor Roscoe's "Chemistry" is fully on a level with the volumes of his Edinburgh and London colleagues. Dr. Roscoe, following in the wake of Faraday, Tyndall, and a host of other great science teachers, insists on the absolute necessity for experiments, not merely as developing facts, but as a mental exercise for the student. In the volume on "Physics," Professor Balfour Stewart has tried to do too much, and has naturally failed. Unlike Chemistry and Geology, Physics comprehends several distinct sciences, which should have been treated in separate volumes; the consequence may be easily foreseen, and we regret to say that this important volume of the series is one of the most incomplete. Fancy a work on physics, no matter how elementary, which ignores the mariner's compass and the magnet! Professor Stewart's general style is more fitted for the lecture-theatre than for the school-room, and we cannot help thinking that it is contrary to all the modern principles of teaching to perform an experiment, and refuse to give the why and the wherefore (35, Syphon, p. 46). Lady Barker's "Principles of Cooking" are perhaps a little too general for the class they address, although they contain much excellent information conveyed in a lucid and pleasing manner. "First Lessons on Health," by J. Berners, are excellent as far as the matter is concerned, but there is a moralizing and sentimental tone pervading the book, which greatly detracts from its real merits. We regret to see, too, that the author is a prey to that wretched old superstition that children eat too little fat. The volumes on "Roman History," "English Grammar," and "English Literature" we have only glanced at, as they hardly come within the scope of The Garden. They seem, however, to be fully up to the general standard of the series. Mr. Brooke's "English Literature" assuredly contains more interesting details on the subject than were ever yet compressed into the same number of pages. We are anxiously awaiting the appearance of Professor Huxley's introductory volume, which, like most prefaces, is evidently going to be written last. Professor Jevons's "Logic" is a capital compilation, and is as highly concentrated as any of the others.

London Parks and Commons.—In addition to the greater parks of London vested in the Crown, but open to the public, the Metropolitan Board of Works state, in the Report they have issued this year, that there are under their management about 1100 acres of public recreation grounds in various parts of the metropolis and its suburbs. There is Blackheath, comprising 267 acres; Hampstead-heath, 240 acres; Finsbury Park, 115 acres; Southwark Park, 63 acres; Hackney Downs, 50 acres; Well Street (Hackney) Common, 30 acres; North and South Mill Fields, 57 acres; London Fields, 27 acres; Tooting Beck Common, 144 acres; and Tooting Graveney Common, 63 acres. The gardens on the Thames Embankment and in Leicester Square present 14 acres. The remainder of the 1094 acres is made up of Clapton Common, Stoke Newington Common, and Shepherd's Bush Common.

* "Science, Literature, and History Primers." Edited by Professors Huxley, Roscoe, and Stewart. London: Macmillan & Co.

PLATE XL.

THE GREAT CALIFORNIAN SAXIFRAGE.

(SAXIFRAGA PELTATA).

Drawn by H. HYDE.

Few genera present greater diversity as regards external appearance than the Saxifrages. While on the one hand we have many kinds which approximate so closely to the delicate growth of Mosses as to be popularly recognised as belonging to that family, here we have a species whose foliage, in massive expansion, almost vies with that of Rhubarb, and one which differs from every other Saxifrage in the fact that, like the Castor-oil plant, its leaves are peltate or shield-shaped, that is, the petiole is attached not at the base of the blade of the leaf, but at or near the centre, the primary veins radiating in all directions from the top of the petiole. In this respect it is so exceptional that in Engler's valuable and interesting monograph of the genus it stands as the sole representative of the section Peltiphyllum. The first impression on glancing hurriedly at the accompanying plate suggests a densely-blossomed variety of our flowering Rush (Butomus umbellatus); but closer inspection shows the pentamerous arrangement of the parts of the flower, and the bipartite stigma which is one of the most important generic characteristics, and holds constant through its many varying sections. This fine Californian Saxifrage has a thick fleshy rhizome, as shown in the annexed woodcut. The foliage arising

Rhizome of the Great Californian Saxifrage.

from the growing point of the rhizome is supported on long foot-stalks, each leaf attaining, under favourable conditions of growth, a diameter of between 18 in. and 2 ft.; orbicular in general outline, but deeply lobed and doubly serrated as to the margin, with a well pronounced peltate character as regards the union of blade and petiole. The leaves are not fleshy, and acquire in the autumn a deep purplish-chocolate tint that much enhances their beauty. The flowers, which are of moderate size as compared with the other parts of the plant, are arranged in dense cymose corymbs, supported on stout fleshy gland-bearing foot-stalks that attain a height of fully 18 in., just sufficient to raise them above the mass of foliage. They are of a delicate rose colour, and vary in tint according to age, thus adding variety in the way of colour. This interesting species was originally discovered growing on the banks of the Sacramento River, by Hartweg, but he only alludes to it as a Saxifragaceous plant; afterwards it was referred by Torrey to its true position in the genus. It is essentially a moisture-loving plant; its wide expanded leaves, though not absolutely delicate in structure, appear to be exceedingly sensitive of drought; hence in cultivation it ought during summer to have an abundant supply of moisture at the root; in fact, it should enjoy all the conditions that an artificial bog supplies during its season of growth and blooming, but when at rest during winter such moisture would be detrimental, and although perfectly hardy, it would be as well to remove it to a drier position, which of course in its native habitat by the margins of mountain streams, under a dry snow-white mantle it fully enjoys. The rhizomes of the plant I have now in cultivation came by post in a small box from its native habitat

THE GREAT CALIFORNIAN SAXIFRAGE, (SAXIFRAGA PELTATA

on the Sacramento in exchange for S. purpurascens, the only precaution taken being to wrap it before packing in a thin gutta-percha covering so as to check evaporation. I have not yet blossomed it, but, judging by the plate, its peculiar character is supplemented by a beauty greater than I expected, and which renders it well worthy of general cultivation.

Botanic Gardens, Hull. James C. Niven.

[Our plate of this plant was drawn from specimens that flowered freely in Messrs. E. G. Henderson's Wellington Nurseries, St. John's Wood. That it is quite hardy and flowers freely there is equivalent to saying that it is among the most vigorous and hardy of herbaceous plants. The fact that it frequently grows beside brooks in the mountains of California makes it probable that it will thrive best in moist soil or by the water-side. Naturally, it would seem to lose its leaves in summer after flowering and making a vigorous growth. We could find no trace of the plant in autumn in California, though well advised as to the locality in which it grew.]

MY DIARY FOR SEVEN YEARS.

By W. DENNING.

October 2.—*Potting*—Double White Feverfew from borders, also a quantity of Selaginella in 60-sized pots for room decoration; potting up Pinks on account of wireworm. *Miscellaneous*—Putting first batch of Roman Hyacinths and Roman Narcissus to force in very slight heat; putting Myrtles and Orange trees into conservatory; also Heliotropes in pits for winter flowering; taking up and potting Hollyhocks, and placing them in a cold pit; putting Pelargoniums into Strawberry-house for winter flowering; pricking out Cauliflowers, also Red and Green Cabbage, and more Lettuce; nailing in Peach trees a little; syringing Peach trees with soap-suds and Tobacco-water for green fly; also Azaleas again for thrips, using 4 oz. of soft soap to a can of water; gathering some Cob Nuts, also the last Peaches under glass (not so good as those outside); cutting Marjoram, tying it in bundles and putting them in a Vinery to dry; roping some Onions to put in loft against chimney for keeping; getting up Carrots and Beetroot; taking out a trench in front of wall to add to Muscat and Hamburgh-house border; digging ready for Strawberry plants; top-dressing Strawberry plants with soot; looking over Camellias and Oranges for scale; keeping French Beans at 60°.

Oct. 3.—*Potting*—Japan Lilies; also Solomon's Seal for forcing; getting scented-leaved Pelargoniums into pits. *Cuttings*—Put in of Viola cornuta in cold frame. *Miscellaneous*—Pricked out Cauliflowers under the protection of a south wall; putting cases over French Beans in the open border; gathering Winter Nélis, Winter Bon Chrétien, Gansel's Bergamot, Brown Beurré, and Thompson's Pears.

Oct. 4.—*Potting*—Pelargoniums, consisting of old plants of Mrs. Pollock, Goldfinch, Cloth of Gold, and Golden Chain, from flower beds; putting Primulas into lean-to pits, keeping them at from 55° to 60° at night; getting the Myrtles from front steps in-doors; putting Eucharis into Cucumber-pit for winter flowers. *Miscellaneous*—Gathering Marie Louise, Napoleon, Beurré Superfin, Jersey Gratioli, Zephirin Grégoire, Beurré Diel, Crassane, Colmar, Beurré d'Aremberg, and Louise Bonne of Jersey Pears; also Golden Pippin and Broadling Apples; also quantities of Raspberries; getting up all roots; getting last of Onions under cover; making Stanhopea house ready for Vandas; making a frame ready for Calceolaria cuttings; putting a waterproof cover of straw on Vinery border; spreading manure on land for spring Cabbages; earthing up winter Cucumber plants; placing evaporating pans on pipes in East Indian house to produce more moisture.

Oct. 5.—*Sowing* Cucumbers for planting in January; taking up some seedling Lobelias and putting them in well-drained boxes. *Miscellaneous*—Getting all Mignonette, Salvias, and Pelargoniums under cover; putting pot Vines from Vinery into orchard-house; taking up Cauliflowers and putting them into a cool place to keep; planting Maréchal Niel Roses in greenhouse, also a large quarter of Cabbage out-of-doors for spring use; watering all permanent Peach trees; stopping and watering Cucumbers, which are now syringed only once a day; gathering Salwey Peaches under cover; gathered all fruit except Easter Beurré Pears and Nonpareil Apples; putting some fresh soil to Peach trees; putting lights on Peach-house and Vinery, not shutting them up however, except in bad weather; keeping Cucumbers at night about 70°, and Mushroom-shed about 55°.

Oct. 6.—*Potting*—Magnolias, also late Tulips and Anemones, and plunging them. *Miscellaneous*—Getting Callas under cover, also Carnations into pits for winter flowering; housing all greenhouse plants which had been placed out-of-doors for a time; putting Achimenes beside pipes in stove; re-arranging Orchid-houses; planting last year's forced bulbs to bloom in spring; pricking off four lights of Cauliflower plants in frames; gathering Peas sown 10th July.

Oct. 7.—Putting tree Mignonette in pots in conservatory, coming into flower slowly; should not be stopped after 1st September; arranging Pleiones for flowering; cleaning June-struck Heliotropes, and putting them on Peach-house side-shelves; laying in a large quantity of Cerastium; clearing scale off Peach trees; putting rough frame together for the protection of half-hardy material; putting manure on Peach tree pots as a top-dressing to plump up buds; filling the bins with soil and manure in potting shed; beginning to make turf pit; cleaning autumn-sown Onions; pulling up and burning all vegetables in garden as they get useless; mowing rough places in wood; shutting up scarlet Pelargonium houses and putting on a little fire-heat.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

The time is now approaching when there is usually the greatest scarcity of flowers, as the outdoor beds and borders from which during the summer and autumn so many were furnished to mix with those grown under glass, may be destroyed by a single night's frost; consequently, everything in pots that has been out-of-doors, and which by removal to the greenhouse can be induced to flower longer than it otherwise would do, should be at once taken under cover; for this purpose pink or scarlet Geraniums that have done duty through the summer with their pots plunged in vases, should be taken indoors, where with a little attention they will bloom freely for a considerable time. Such of these plants as have received especial preparation by growing them on in 6-in. or 7-in. pots fully exposed to the sun, so as to induce that ripened condition which is necessary to insure the freest disposition to flower with the least leaf-growth, should be moved to the lightest position in the greenhouse, or a pit where they can be kept a few degrees warmer than in an ordinary greenhouse, will be still better; elevate them as near to the roof as possible, and if the pots be very full of roots, manure-water once a week will assist them. Thus managed they will keep on blooming a good portion of the winter. As a winter-flowering plant, used in this way nothing hitherto has surpassed the well-known variety called Vesuvius; but this fine kind will most likely have to give way to the semi-double-flowered Wonderful—a sport from Vesuvius, and one which, added to the general useful properties of that sort, has the advantage of retaining its flowers for an extraordinary length of time; this will, doubtless, also be one of the very best bedding kinds.

Tropæolums.—Any of the free-blooming, climbing varieties of Tropæolum are very serviceable for the production of flowers through the winter, and for this purpose they are often trained up pillars or rafters; so managed they bloom profusely, and produce a cheerful effect, but they are not so useful as when trained to a few sticks inserted in the pot, as in this way they can be moved about to whatever place is most conducive to their blooming. If they can be accommodated with a temperature of about 50° at night, with plenty of light in the day, they will keep on flowering for months. The length of stalk possessed by each bloom, and their enduring capabilities when cut in water or wet sand, make them very useful for small vase decoration; where employed in limited quantities mixed with white Camellias, Azaleas, and similar light-coloured flowers, they are very effective. Amateurs with limited glass accommodation for growing winter flowers, will find that by employing free-growing, continuous-blooming plants such as the above, they can have a much more plentiful supply than by attempting the growth of subjects that are rarer and more difficult to cultivate.

Gladioli that were kept long out of the ground in spring, with the view of their being potted for flowering in the greenhouse in autumn, should now be taken up and potted. If the ground be at all dry give them a good watering previous to their being got up, otherwise the roots are certain to get broken. Do not use larger pots than will hold the roots without undue pressure, say 6 in. or 7 in. in diameter. Any ordinary garden soil will do for them. The usual advice, not to give water for some days after potting, must not be adhered to in the case of these and anything of a similar character, otherwise the foliage would be certain to suffer. As soon as they are potted give as much water as will moisten the soil, and put to each a neat stake to support it; place them in a cold frame, Vinery, Peach-house, or wherever room can be found where there is no fire-heat. Thus treated, they will come into flower in succession for some weeks, and are very useful for greenhouse or room decoration. Expensive sorts are unnecessary, but such should be selected as naturally flower late.

Calla æthiopica.—Those that were divided and planted as recommended in the open ground in the spring, will now be good, sturdy plants with short leaves, much superior to those kept in pots. They should at once be taken up and potted. As they are all but aquatic in habit they need a liberal supply of water continuously, on which account they must have the pots well drained, for although requiring so much moisture they will not do well if the soil become sour. If a portion of the plants be wanted in flower early, that can be accomplished by putting them in a little warmth. Plants of all kinds in frames and pits that are in any way susceptible of cold, and that are fully exposed during the day by the lights being drawn off, should have them replaced every evening, particularly on clear, bright nights, which are more likely to be the precursors of a low temperature than when the sky is clouded. This for some weeks will be sufficient protection without having recourse to covering with mats, the presence of which when not needed has simply the effect of restricting the full amount of light.

Bedding Plants.—Such of these as are required to be taken up and potted must not be allowed to remain out so long as to suffer from frost, as, after they have been injured in that way, they will do little good. The Tricolor] Pelargoniums should be first secured; in taking them up, do not break any more roots than can be avoided, but do not attempt to lift them with balls; remove about one-half of the leaves, leaving such as are nearest the points of the shoots; let the soil be open, with a good proportion of sand in it; do not use pots larger than the roots can be got into by coiling them closely inside; make the soil quite firm, but give no water for a week or ten days. Gazanias, Lobelia speciosa, and any others that are required for stock, should be also taken up and potted; respecting this Lobelia it is not advisable to trust to seedlings, as these generally vary so much in both habit and colour as to make them much inferior to those propagated by cuttings from selected plants. Where an insufficiency of the earlier struck cuttings of bedding Pelargoniums exists, more should at once be put in, although these cannot be expected to get so well established before winter as such as were rooted sooner; yet the harder condition of the shoots now will ensure their striking freely, provided they are fairly treated. Six or eight may be put in a 6-in. pot, removing all the leaves except two or three at the top; ram the soil quite hard in the pots, and do not give any water until it gets so dry as to absolutely require moisture; they will do well in a cold frame for a time with a little air during the day; the additional warmth which they will get here through sun-heat will accelerate the formation of roots.

Pleasure Ground.—Where shrubs that have got too much crowded have to be removed, that kind of work should not be longer delayed, especially if the plants to be moved have been planted a considerable number of years; in that case, if the work be put off until the ground has become chilled, they will be much more likely to suffer through the winter. In all cases, moisten freely the whole ball, which will have the effect of inducing the formation of young fibres, that will keep on growing up to the end of the year.

Peaches and Nectarines.—Where these have become too much crowded on walls, the present is a good time to remove those that require it, re-planting them immediately; this is essential, otherwise their removal had better be deferred till a little later in the year, as if any deciduous tree or shrub, that has not yet cast its leaves, be kept out of the ground even for a day or two, the bark will shrivel more or less, which will do much injury. Where this can be avoided trees of this kind that are moved now will bear a far better crop the ensuing summer, owing to their making a considerable portion of roots before the winter sets in, the benefit of which to them in the spring must be obvious, as they are ready to answer the first call on them when the bloom buds begin to swell, which they are certain to do when the time arrives whether there are any feeding roots to sustain them or not. I have frequently had as good a crop of fruit from trees 8 ft. or 10 ft. high that had been thus removed early in the autumn as if they had never been disturbed. In this, as in all other gardening matters, the greatest success generally attends operations timely performed. If the trees have to be procured from nurseries, or moved such a distance as will entail their being out of the ground some days, care must be taken that the roots are securely packed in a sufficient quantity of damp material that will prevent their getting dry, or the bark will be sure to become shrivelled in the way just described.

Kitchen Garden.—A little more Prickly Spinach should now be sown. In severe winters this will generally be found to stand better than that sown earlier, and it will not be inclined to run to seed so early in the spring. That first sown should be thinned as soon as the plants are large enough for use, but on no account must they be allowed to get crowded, as nothing tends so much to render them incapable of resisting severe frosts.

Orchids.

Henceforth, until the summer returns, the use of blinds as a protection from the sunshine should be wholly discontinued; therefore they may be taken down, and, after careful drying, may be stowed away in a dry shed until wanted again. Some leave their blinds up all winter to be lowered at night in very cold weather, in order that they may assist in keeping up the temperature of the house, but as they cannot be so employed without excluding a considerable amount of light such a course is objectionable. When blinds are made use of in this manner in winter it frequently happens that a heavy fall of snow takes place during the night, and this falling on the canvas prevents the blinds being drawn up in the morning, and thus light is excluded in very cold weather, sometimes for days together, whereas if the snow had fallen on the glass without the intervention of the blind, the inside heat would have assisted in melting it, and the plants would have received the benefit of the light which is of so much importance to them, particularly in winter. As a matter of economy, too, it is advisable to have blinds taken down and stowed away in preference to using them in this manner, for they are more injured by being let down or drawn up a few times while frozen than by a whole summer's wear. If, however, through an inefficient apparatus the proper temperature during winter cannot be maintained, the blinds may be left up to be used at night during very cold weather. Any temporary contrivances that may have been devised during summer for the admission of air, in addition to that admitted through the ordinary ventilators, should now be firmly closed, and for the remainder of the season the ventilators only should be used for that purpose. If not already done, the glazing should be seen to, but in mending broken glass great care is required, in order to avoid dropping the glass or putty into the hearts of the plants. Advantage should be taken of every fine day to admit air not sparingly but liberally, not by opening one or two ventilators wide, but by opening every ventilator in the house top and bottom a little; the whole of the air in the house is then changed and purified without causing a draught in any part of it. James O'Brien.

Conservatories.

The absence of stove plants in these structures through removal to warmer quarters on account of the lateness of the season, has divested them of their principal ornaments. Substitutes for them must be found in striking foliage and flowering plants of a more hardy character. Among the former the old Maranta zebrina still stands pre-eminent, and is one of the most useful decorative plants which it is possible to have for conservatory work at this season. Although fond of a little more warmth than is usually kept in such places at this time of year, it will stand very well for the next two months to come if the plants have not been recently subjected to strong heat, and are properly hardened off before being used. All that is necessary to insure their safety is to keep them somewhat drier at the root than they have been accustomed to while growing in a warmer temperature, and to set them in positions away from cold draughts or where air is admitted; a little ventilation will, however, now be required beyond what is just sufficient to keep young growths from damping off, or the thermometer from running unduly high should bright sunny days occur. At such times the ventilators should be closed early so as to shut in a good amount of solar heat, and obviate the necessity of having to use fires to keep up a genial temperature. By so doing, such plants as Achimenes, Coleus, Balsams, and others, may be rendered useful for some time longer, and even Zonal Pelargoniums, Salvias, and most flowering plants of that class, will be all the better for the extra warmth. In cases, however, where Camellias are planted out or occupy positions in the conservatory, the temperature must be kept as cool as possible, or they will most likely shed their buds. Although they will bear a great amount of heat when making their growth, they are particularly impatient of it at this season of the year, and nine-tenths of the failures that occur in the case of early Camellias are caused by attempts to force them, which they resent by casting their buds. The only way to get them to bloom in mid-winter is to start them early into growth, and keep them in moist heat till they set their flower-buds. Thus treated, they bloom naturally at a time of year when they are most valued, and last longest in perfection. The flower-buds will now be showing themselves very prominently, and should at once be partially thinned, by removing all the smallest and such as are badly situated for being seen when fully expanded. Where it is desired to keep plants to a limited size it is a good plan to take out the wood-buds at the extreme points of all the strong shoots, so as to induce the plants to break farther back, which they would not do were these strong buds allowed to remain. This is the practice I am obliged to adopt myself with some vigorous specimens that are already as large as the space and position which they occupy will admit. By disbudding

early, those in a dormant, undeveloped state lower down the shoot are forced to swell, and, as a result, start readily when the time comes for them to do so. It will now be necessary to admit all the light possible by reducing roof-climbers to moderate limits, and which at no time should be allowed to get interlaced and entangled, whereby much of their natural grace and beauty is lost. As growth has now almost ceased in the case of most of these for this season, little water at the roots will now be requisite, for a moderately dry state of the border during winter will have a beneficial effect on the health of the plants. This applies more particularly to Passifloras, Tacsonias, Bignonias, and that class of summer-blooming plants, but Lapagerias will still require liberal supplies, as the flowers they bear in such abundance are now making active demands on the roots. In order to make the fronds of Ferns useful for cutting, and enable them to stand the winter well, they should now be fully exposed to all the sun and light available, so as to get them well ripened. Such as are subject to thrips, as is the case with Lomarias, Woodwardias, and a few others, should be closely watched, in order that they may have the necessary attention before they become disfigured, which they soon do should these pests once effect a lodgment. The quickest and most effectual way to rid the plants of their presence is to dip or syringe the head of each plant with strong Tobacco-water, or Fowler's Insecticide, using the latter at the rate of from 4 oz. to 6 oz. to the gallon of soft water. The Insecticide should in no case be used unless the fronds be fully grown, or they will be liable to injury if wetted with it while in a soft immature state. To prevent waste of the liquid during the process of cleaning the plants, they should be laid on their sides around a tub or other vessel of sufficient size to catch it as it runs from them, by which expedient a gallon or two of Insecticide may be made to cleanse a great number of plants, and much more expeditiously than could be done by the ordinary method of hand-sponging.—J. Sheppard, *Woolverstone Park.*

Kitchen Garden.

The soaking rains which have continued with but little intermission during the whole of this month have been wonderfully beneficial to kitchen garden crops, so much so that instead of a dearth of vegetables, as was the case a month ago, there is now promise of an abundant supply; Kales, Coleworts, Broccoli Sprouts, and Savoys have all made rapid growth, and if not yet earthed up should receive that attention at once, more for the purpose of preventing injury through wind-waving than for any benefit likely to accrue from the practice. Weeds, too, have grown proportionately rapid, and as soon as fine weather again sets in the hoe should be at work. The stirring of the soil will also prove beneficial to winter crops of Spinach, Endive, Lettuce, Onions, Turnips, and Carrots, all of which should be thinned out ere any of the plants are injured by overcrowding, sturdiness being an indispensable requisite to safe wintering. Continue to plant out Lettuce, Endive, Cabbage, and Coleworts as ground becomes vacant, and if the principal plot of Cabbages be not yet planted, it should be no longer delayed, as it is desirable to get them well established before sharp frosts occur. Slugs are more than usually prevalent this season; it will, therefore, be necessary to keep a sharp look out for them; next to hand-picking night and morning, the best plan is to put down bran in small patches. All kinds of slugs are more partial to this than the Cabbages, as will be seen on examining the bran about nine o'clock each evening; we pick them up and put them into pots containing quicklime. As sharp frosts may now occur at any time, Cauliflowers that are anything like ready for use, or exposed, should be looked over, and should have their leaves bent over the flowers to protect them; or, if they are becoming fit for use in too great numbers, lift them and hang them up by their stems in a cool shed; they will then keep good for two or three weeks. Lose no time in planting out the desired quantity that are to be grown in hand-lights to succeed the Broccoli next spring; also prick out a quantity to be wintered in frames to succeed those grown in hand-lights. Full exposure to the weather should be given till danger from frost is anticipated. Make another sowing at the foot of a south wall, which, if the winter does not prove exceptionally severe, will stand well, and come in acceptably for successional spring plantings. A sowing should also now be made of Cabbage and Brussels Sprouts; the latter are always best from autumn-sown plants. Peas are almost over, and what still remains we have found it necessary to net up. How is it that birds always attack them most in autumn? The haulm should be removed as soon as all the pods are gathered, and the sticks used for fire-lighting, &c., as it is never desirable to use them for Peas a second year. Should the ground not be required for Winter Green crops, let it be deeply dug or trenched as soon as time can be spared, not only for neatness sake, but in order that it may reap the full benefit of exposure to the weather and winter frosts. The same remarks apply to all vacant ground. French and Runner Beans are now bearing as well as at any period during the season, but unfortunately they are now at the mercy of the weather, and supplies may soon be cut short. When practicable, it will therefore be advisable to spend a little time in protecting them; dwarf kinds are readily protected by means of tiffany, frigi-domo, or mats, which should be brought into service whenever the weather looks suspicious. Those sown in frames should have the lights drawn off daily, but it will now be good policy to close them up at night. Thin out the plants to 6 in. apart, and earth up or support them with Birch twigs; give an abundance of water and syringe frequently as a preventive against red spider, to the attacks of which they are peculiarly liable. A sowing should now be made in pots to succeed those in frames, that is, where a constant succession is expected. The earliest Celery having now all but completed its growth, should be finally earthed up; first let each plant be tightly tied with matting, and then draw out all suckers or offsets; the first prevents the soil from entering the hearts of the plants, and is not nearly so formidable an operation as it looks, and by clearing away all small foliage and suckers much finer heads of Celery are insured. Late-planted Celery will be better for remaining unearthed for another month or so yet. Gather Tomatoes as they ripen; a continuation of cold nights will stop any further growth, but any fruit approaching maturity will ripen perfectly if hung up in Vineries or laid on shelves in houses or frames. If green Mint, Tarragon, or Balm be in demand during winter, a small quantity of each should now be dug up and potted; any warm place will be suitable for them. Mustard and Cress must now also be sown under protection. When dry tie up Endive to blanch; it is also a good plan to cover some with inverted flower-pots, which blanches it more effectually, or it may be lifted with good balls of earth and heeled in thickly in sand in a Mushroom-house or in a dark shed. Chicory and Dandelion may also now be dug up and planted in a similar place for like purposes; a small quantity of each should be introduced every two or three weeks according to the demand. Potatoes should ere this have been housed; all the latest kinds are affected by the disease, some very badly, and will require frequent examination in order to remove affected tubers, which if left soon contaminate others. A sprinkling of charcoal dust or lime helps in some measure to preserve them. Onions, too, should now be housed; the cooler the place in which they are stored if dry the better they will keep. The main crop of Carrots may now at any time be dug up and layered in sand in a cool shed or pitted in the open ground thatched with straw, and afterwards covered with soil or Bracken.—W. Wildsmith, *Heckfield.*

Trees and Shrubs.

The planting of Conifers, evergreen shrubs, and the regulating of shrubbery borders, should be pushed on now, as they are more certain to withstand the removal than in the case of winter or spring planting; however, to insure success, there are several points it would be well to bear in mind. The ground for the reception of the plants should be thoroughly prepared by digging to a depth of from 18 in. to 24 in., according to the nature of the soil and sub-soil, well turning and stirring it; stones and bad soil should be cast out, and good fresh turf, road-scrapings, or rich compost added. The plants must be carefully lifted and planted at once before their roots get dry; especial care should be taken not to injure the roots of Conifers, as the mutilating or bruising of their fibres is apt to cause a check in their development, and frequently a year or two elapses before they can be again fairly started into active growth. If the trees be large a dry and light compost should be used to cover their rootlets, adding a liberal supply of water to wash the soil well in amongst their fibres. Evergreens planted now will generally make new root growth before the soil is chilled by frosts. Stake the trees where necessary to prevent them being blown out of the perpendicular by high winds, and finish the planting by spreading a thick layer of Bracken or other rough litter over their roots. Established plants of Pampas Grass will well repay attention by applying a surface-dressing (they are gross feeders), so as to encourage and maintain a profusion of flower-spikes every season, a layer of road-drift, rich light compost, or manure (if it can be obtained) spread over their roots occasionally being necessary. Where hares and rabbits are numerous each plant should receive some protection from their nibbling propensities; a few boughs of Rhododendron on Laurel round the necks of the plants will protect the young growths from injury. The trimming of rides and shooting tracks should now be commenced. Oven and fire-lighting fagots for home use should now be collected and put into sheds, or stacked before bad weather sets in. Ground intended for forest planting should be drained, where naturally wet, by means of open ditches; fences must be made secure against the inroads of cattle where necessary; the clearing of rank weed-growth should be completed before commencing to make holes for the trees; where there

is a strong growth of Heath it ought to be cut and burnt. Young plantations rarely succeed well if a crop of this latter be allowed to exist, for Heath robs the plants of moisture and impoverishes the soil more than almost any other plant; on the other hand, wherever there is a luxuriant growth of Bracken young plantations generally succeed well.—G. B., *Longleat.*

THE FRUIT GARDEN.

GOOSEBERRY SHOWS.

The annual exhibition of the Harborne Gooseberry-growers' Society has, we learn from a contemporary, been recently held at Manchester, and with great success. This is now the oldest of these societies in existence, having been founded in 1815, so that this was its sixty-first exhibition. One of its members, Mr. J. Barton, of Harborne, now over eighty years of age, who took the premier prize fifty years since, last year won the premier prize with Bobby, one of the heaviest berries ever grown, its weight being 34 dwt. 20 gr., the largest berry exhibited anywhere last year. The society numbers thirty-one members, who must live within a radius of three miles of Harborne, and must be growers. On this occasion about 450 berries were weighed, and of these ninety-five took prizes, and suffered the usual penalty of being "topped and tailed," so that they cannot be exhibited elsewhere. The "weigher's" duty is to take the berries from the exhibitors, and with a pair of apothecary's scales before him to accurately weigh the berries with Shylock's acuteness, each decision being registered by the secretary, who sits by his side. This operation extends over three or four hours. These two gentlemen were not to be envied in the least, for it was one of those fearfully hot days for which 1876 will be celebrated, and the room was crowded with enthusiastic Gooseberrians, who eagerly crowded round the weigher and his assistant, and watched the scaling of their pet berries. To the uninitiated it may seem strange to see with what care the berries are brought in small boxes carefully wrapped in cotton wool, but there is an earnestness and enthusiasm amongst Gooseberry-growers such as we find still amongst old florists who, with their hearts in their work, cultivate and exhibit with an earnestness of purpose it does one good to see.

The following are the names and weights of some of the leading berries at this exhibition:

	dwt.	gr.		dwt.	gr.
Three heaviest of any colour, three Bobbies (red)	66	14	Best pair of twins, Ringer (yellow)	41	7
			Premier Berry, Ringer (yellow)	25	23

Red Berries.

	dwt.	gr.		dwt.	gr.		dwt.	gr.
London	23	16	Bobby	19	5	Maccaroni ...	17	1
Lord Derby ...	20	8	Lion's Provider...	87	12	Speedwell ...	17	0
Dan's Mistake ...	20	5	Clayton	17	5			

Yellow Berries.

	dwt.	gr.		dwt.	gr.		dwt.	gr.
High Sheriff ...	21	12	Leveller	19	0	Lady Haughton	18	9
Mount Pleasant	21	0	Criterion	18	20	Catharina ...	18	5
Ringer	20	5	Peru	18	16			

Green Berries.

	dwt.	gr.		dwt.	gr.		dwt.	gr.
Shiner	21	5	Thumper... ...	17	17	Matchless ...	16	5
Stockwell ...	19	5	Plunder	17	5	British Oak ...	15	21
Surprise	18	12	Diadem	17	0			

White Berries.

	dwt.	gr.		dwt.	gr.		dwt.	gr.
Postman	20	12	Hero of the Nile	19	0	Snowdrift ...	16	15
Overseer	19	18	Careless	18	12	Queen of Trumps	15	12
Antagonist ...	19	11	Transparent ...	18	12			

In Mr. Charles Leicester's "Gooseberry-Growers' Register," published every autumn, is a record of premium prizes for the heaviest Gooseberry grown in England as far back as 1809, in which year Sportsman, weighing 18 dwt. 22½ gr., took the leading honour, but failed ever after to put in an appearance as the "biggest," or rather heaviest, Gooseberry. In 1810, Crown Bob, an old and well-known favourite, was the heaviest berry; and up to the year 1825 no berry had exceeded 26 dwt. 17 gr., but in that year Lion, a red berry, scaled 31 dwt. 16 gr., and from 1824 to 1831 Lion, with two exceptions, took the premier prize; but in 1830 the variety named Teazer, weighing 32 dwt. 13 gr., was in reality a teazer as a competing berry for weight that year. In 1832 a variety named Bumper, which seems to have fallen out of cultivation, scaled 30 dwt. 18 gr., and although Wonderful, Companion, and London continued from 1833 to 1840 to be the premier berries, it was not until 1840 that Bumper was beaten in weight, and then London, a fine variety, took honours. From 1842 to 1854 London continuously won the blue riband, but lost it in 1855, as Paris, 1 dwt. heavier than London of the preceding year, won the battle. In 1845 London weighed 36 dwt. 16 gr., and in 1852, 37 dwt. 7 gr.—a weight not exceeded by any berry from 1809 to the close of last year, in fact, this berry is the heaviest on record. It is not impossible that heavier berries have been grown, but, alas! there is such a thing as "bursting," and many bright hopes have resulted in grief from a fatal bursting just before the show. This old and still favourite variety, London, carried off the blue riband twenty-five times in the sixty-seven years recorded in the "Register," but a new variety, Bobby, also a red variety, seems destined to run it very hard. On reference to a tabulated list of prize-winning berries of all colours for last year, it appears that—

Shiner (green)... ...	took 213 Prizes.		Hero of the Nile (white)	took 140 Prizes.	
Dan's Mistake (red) ...	,,	178 ,,	Stanton (red)	,,	125 ,,
Stockwell (green) ...	,,	164 ,,	Mount Pleasant (yellow)	,,	125 ,,
Antagonist (white) ...	,,	163 ,,	High Sheriff (yellow)...	,,	115 ,,
Careless (white) ...	,,	149 ,,	Surprise (green) ...	,,	107 ,,
Ringer (yellow) ...	,,	147 ,,			

whilst 217 other varieties were also prize-winners last year, many of them obtaining a large number of prizes. Some idea of the interest taken in Gooseberry growing may be realised when it is borne in mind that 124 exhibitions were reported in the "Register" in 1875. The Falstaff Hotel, in the Market Place, Manchester, a well-known house to hundreds of old florists, is the head-quarters of the Gooseberry, inasmuch as the National Gooseberry Show, as well as that of the seedling Gooseberry Society, are held there. Last year a variety named Shiner, weight 32 dwt. 6 gr., took the premier prize, Ploughboy coming in second; and on that occasion several seedlings were exhibited. Cheerful, a green variety, weighing 30 dwt. 9 gr., was exhibited by Mr. C. Leicester, a veteran grower, full of Gooseberry lore, and the editor and compiler of the "Register" above referred to—an authority accepted as the "Blackstone" of Gooseberry law. At the National, prizes are offered for the finest-flavoured Gooseberries, irrespective of size, twelve berries of each. The result of last year's competition was as follows:

Ploughboy (red) ...	...	1st Prize.	Telegraph (green) ...	...	1st Prize.
Lord Derby (red) ...	...	2nd ,,	Stockwell (green) ...	...	2nd ,,
Leveller (yellow) ...	...	1st ,,	Succeed (white) ...	...	1st ,,
Seedling (yellow) ...	...	2nd ,,	Careless (white) ...	...	2nd ,,

THE MAY DUKE CHERRY ON NORTH WALLS.

It is generally supposed that a north aspect is only suited for the Morello Cherry, but this will be found to be a mistake, for my experience is that the May Duke has grown successfully upon a north wall. This fruit is very highly esteemed by many, and to prolong its season of development is a matter of the first importance; a really good ripe May Duke will fairly bear comparison with any fruit, and no other of which I am aware will stand carriage so well without injury. It is a fruit for every one, and a tree for every vacant spot of wall of a few feet, be it north, west, south, or east; indeed, if a few May Duke Cherry trees be planted in each of these aspects, so much longer will be the season of fruit. It is much to be regretted, also, that in many gardens every variety of Cherry but the Morello is planted on one wall only. The extraordinary fine crop I have had this year on a north wall has induced me to advise others to give a part of "the Morello wall" to May Duke and Late Duke Cherries, for I began to gather the Dukes in June, and only finished last week, and the last batch might have remained a week or two longer on the trees. If to such a long season be added an early house for the growth of Cherries (and nothing is easier to grow), we should probably prolong Cherry-tide for at least another month or six weeks. To grow May Dukes on north aspects successfully, requires all the pruning to be completed in summer; winter pruning means gumming, and I find that as the soil keeps cold and wet, a good coating of old brick and lime rubble is a great restorative, and will well repay the labour and expense attending it. I would caution your readers against the mistake of planting any of the Heart varieties on north walls, for they will be sure not to succeed.

Hardwicke Grange, Shrewsbury. John Taylor.

Young Vines Losing their Leaves.—This is an affection, or rather misfortune, which in the case of young growing Vines perplexes, and to a certain extent alarms, some growers, causing them to be apprehensive that some disease has overtaken them. The occurrence is most frequent during the second year's growth of young, vigorous Vines; the more rapid and luxuriant their growth the more leaves they lose in this way. We were long puzzled as to the cause of young Vines suddenly, and in the very zenith of their growth, losing so many leaves, but are quite satisfied now as to the cause, which is purely mechanical. When such young Vines are stopped, either before they get to or just as they reach the top of the house, they then begin to thicken with great rapidity, even in many cases, to the rending of their barks, and their circumference at the nodes,

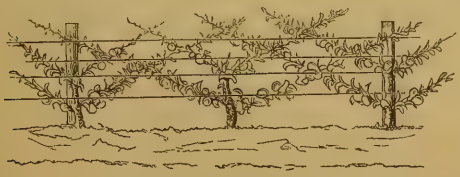
or the place at which the base of the large leaves is fixed to the stem, increases more rapidly than the base of the leaf grows, and so the union of the leaf with the stem is not rent or ruptured, the flow of sap into the leaf checked, and the power of the sun acting on the leaves causes them to collapse and wither, and they soon lose their hold of the stem altogether and fall off, while the leaves on the lateral growth which proceeds from their axils grow on fresh and green. This mechanical occurrence can be easily detected with a magnifier, and is most conspicuous, of course, during bright weather. The Vine, no doubt, suffers slightly from the loss, but not materially. —D. Thomson, in "The Gardener."

RAILWAY CORDONS IN BELGIUM.

During a recent journey through a part of Belgium I was struck with what appeared to me to be a very excellent method of turning railway fences to good account. For miles along the road between Aix-la-Chapelle and Brussels the fences on

Form of fruit tree fence.

either side of the railroad consist of wooden posts 4 in. square and 4½ ft. out of the ground, with four pieces of straight wire nailed to the outer side; between the posts four long, thin sticks are tied obliquely; the fencing is then covered with cordon Apples and Pears of the most suitable kinds for market and other purposes, the Apples being worked upon the Paradise stock. They are planted in front of and between each post, and trained obliquely to the sticks fastened to the wires. The trees appeared healthy, short-jointed, well trained, and likely to be very productive. I could not help thinking of the thousands of once fruitful acres which the railways in this country have



Fence furnished with fruit trees.

thrown out of cultivation, and the desirability of devising some plan for reclaiming and turning to profitable account some part of this lost inheritance. It has often been proposed to plant railway embankments, but I am not aware that this has been fairly tried, or whether it has ever occurred to the authorities that it might be advantageous to substitute fruit trees for the present quick-set hedges which bound railway property. I know there are great difficulties in the way; these may be thought too formidable to be surmounted, but where the iron road passes through a flat country, and one suitable for fruit cultivation, there are always portions of land on each side, and often corners and triangular pieces hitherto left waste, and I cannot help thinking they might be made useful in helping to furnish some of the food required for the support of our people. This is an age in which the fragments should be carefully gathered up, that nothing be lost. It may be urged in opposition that any fruit grown in this manner would inevitably be stolen, but surely the companies could, without much difficulty and expense, exercise some kind of surveillance over their property. Besides, when I remember that we live in a day when education is compulsory and strictly enforced, I would fain hope that the times of man's ignorance are passing away, and that the youth of the England of the future will be too much and too well occupied to find time for such undignified occupations as stealing Apples or Pears. Any way the experiment is worth a trial; the fencing is there, and it would cost very little to purchase and plant the trees. I may observe that fences of fruit trees would only be practicable where the railway passes through land under tillage, and where the fence would not be required as a protection against cattle. The system would not be inappropriate if adopted in our home gardens wherever space is limited, economy practised, and early productiveness of consequence. W. N.

THE KITCHEN GARDEN.

THE CUCUMBER AND ITS CULTURE.

Cucumbers are now grown extensively in almost all parts of the world, and in warm countries are brought to great perfection without the aid of artificial heat. In Britain, however, the case is different; and in order to secure a good supply of perfect Cucumbers even during the warmest seasons of the year, artificial heat is indispensable. Cucumbers are grown in a variety of ways—as in houses, pits, frames, &c., and occasionally out-of-doors; the latter plan is not, however, so much practised as formerly, owing probably to the unpropitious seasons we have experienced of late years. For salads the Cucumber has few equals, and it is now used in various ways in cookery. The best mode of culture is that of growing it in houses, which, if properly constructed, will yield a supply of Cucumbers at all seasons of the year. Propagation is effected by seeds and cuttings. The best kind of houses for Cucumber culture are undoubtedly those with a span-roof, a pathway running through the centre, and a bed on each side. The size of the house must of course depend upon the demand for Cucumbers. Small houses are, however, best for Cucumber growing; and if two can be used for Cucumbers and Melons alternately, it will be found much more convenient than having one large house. A house entirely devoted to Cucumber-growing all the year round must necessarily be larger than when it is only used for winter or spring crops, inasmuch as, having to keep up a continuous succession, fresh plantations must be constantly made; therefore the best kind of house is that with a bed on each side as before mentioned, planting the beds alternately, as each set of plants becomes exhausted. A span-roofed house, from 15 ft. to 20 ft. long and 10 ft. or 12 ft. wide, will, if properly managed, afford a sufficient supply for most private establishments, unless they are very extensive. Houses, with comparatively low-pitched roofs, generally yield the best results, with least trouble from scorching, red spider, &c. They should be built high enough to allow of plenty of head-room, but not higher than is really necessary, as low, close houses are most suitable for Cucumber-growing. Heat produced by hot-water pipes is decidedly the best for supplying atmospheric warmth, inasmuch as it is of a more humid nature than that produced by flues, &c. There should always be sufficient piping distributed over the house to keep up the required temperature, without being obliged to make the pipes intensely hot, the latter being productive of many evil results, such as scalding, red spider, &c. Evaporating pans, placed over the pipes, are of great assistance in keeping the atmosphere of the house in a moist state. Cucumbers may be successfully grown in low lean-to houses, with no other glass than that of the roof—the heat being supplied by means of a brick-flue running round the house, and a stage consisting of rough wooden slabs or planks, supported upon brick piers or wooden posts, erected over the flue along the front of the house. The stage should be 3½ ft. from the glass, which will allow for 18 in. of soil, and 12 in. for the plants to grow before reaching the trellis, supposing the trellis to be 12 in. from the glass. If the front of the stage be boarded up a good bottom-heat may be secured. Bottom-heat is considered by many to be indispensable in Cucumber-growing; this, however, has often been proved to be a mistake, and we have often seen the best Cucumbers grown without the aid of bottom-heat. That plants are benefited to a great extent by the use of bottom-heat judiciously applied we do not for a moment dispute, but still it is not absolutely necessary, except in the case of early Cucumbers grown in

pits and frames. Where, however, it is applied, it must be done with judgment, for there are often crops of Cucumbers ruined by bottom-heat being injudiciously applied. Stable manure is frequently used to supply bottom-heat to Cucumbers, and where it can be properly regulated it is the best, inasmuch as the ammonia from the fermenting manure is most beneficial to the plants, and as the bottom-heat gradually declines the roots descend into the decaying manure and draw therefrom a vast amount of nourishment to support the heavy crops of fruit they constantly carry. A considerable amount of labour in root-watering is also saved. In private gardens hot water is much cleaner and perhaps gives less trouble, and where the pipes are laid in a tank, and the tank at intervals supplied with liquid manure, a large amount of success is the result.

Winter and Spring Cucumbers.

For this crop many cultivators obtain plants by means of cuttings, with the view of getting fruit quicker than from those raised from seed. There can be no doubt that if cuttings are put in at the same time as seeds, the former will make plants capable of bearing fruit earlier than the latter, but they will not continue in a bearing condition so long, nor produce such good fruit as healthy seedling plants. Where any particular kind is grown, and it is desirable to keep it true, propagation by cuttings is the only sure way of attaining that object, but, as a rule, seedling plants are the best. Where, however, cuttings are preferred, they should be put in about ten or twelve days before they are required to be planted out. The best way is to stop the plants from which the cuttings are to be taken a week or two previously; they will then send out side-shoots, which should be taken off with a joint of the older wood attached to them, and inserted singly in small pots well drained and filled with a compost of leaf-mould, loam, and sand in equal parts. If inserted close to the side of the pot they will strike sooner than if placed in the centre. The pots should then be plunged in a bottom-heat of 70°, and have a hand-light or bell-glass placed over them, and be shaded from the sun; and if kept well watered and sprinkled overhead they will be sufficiently rooted in a few days to allow of the hand-lights being taken off; thus the plants will be gradually inured to the light and sun, which treatment will effectually prevent them from becoming drawn. If the plants be likely to become pot-bound before the bed is ready to receive them, they should be shifted into larger pots, otherwise they will be materially injured. In order to obtain a good supply of Cucumbers during the winter and spring, it is necessary to sow sufficiently early to allow of the plants becoming strong and in a fruit-bearing condition before the short dark days arrive; strong plants should therefore be in readiness for putting out not later than the end of September. If plants are obtained from cuttings, they will require to be put in the second or third week in that month; if from seed, a week or ten days earlier. Many cultivators soak their Cucumber seeds in water for a few hours previously to sowing, and in the case of old or very dry seeds it is an excellent plan, inasmuch as it softens the seeds, and causes them to germinate quicker than they otherwise would. There are various methods of sowing: some growers sow single seeds in small pots, and turn them out from thence into the beds; others sow a quantity of seed thickly in pans or large pots, and transplant them. We have found it a very excellent plan to put two or three seeds into 48-sized pots half filled with light leaf-mould and sand, just covering the seeds, and when they are up select the strongest of the plants to remain, and pinch the others out. By the time the remaining plants have made a pair of rough leaves, roots will frequently be seen pushing from the bases of the stems. The pots should then be filled up with soil to within ½ in. of the rim, into which their roots will quickly penetrate, and thereby strengthen the plants, and afford them more room to grow without disturbing the roots, as would be the case in re-potting or transplanting. In whatever way they may be sown, they should, if possible, be placed in a gentle bottom-heat, and kept moderately moist until they are up, when they must be placed near the glass or where they can obtain plenty of light and sun, in order to keep them dwarf and stocky. Whilst the plants are becoming established the bed should be prepared for planting, bottom-heat being provided by means of hot-water pipes or fermenting material. A layer of good thick turves should be laid on the bottom of the bed, grassy side downwards; upon this lay the soil in a ridge along the centre of the bed, and when it is sufficiently warm the plants may be turned out into it 2 ft. apart, planting them 1 in. or 2 in. deeper than they were in the pots, and afterwards water them copiously with tepid water. A good brisk heat should be kept up until the plants get well established in the beds, say 65° by night and 70° by day, allowing the glass to rise 10° higher by sun-heat with a bottom-heat of 65° to 70°. After the plants begin to root freely into the soil in the bed, air should be admitted in the morning on every favourable opportunity, closing early in the afternoon in order to secure all the sun-heat possible. No more fire-heat than is absolutely necessary to keep up the required temperature should be used, inasmuch as all plants thrive much better under the influence of solar heat than by any artificial means. The subsequent treatment consists of training the leaders of the plants up the wires and stopping them when they reach the top. This will cause them to send out side-shoots all the way up the stem, which shoots should also be stopped at the second or third joint; these shoots always show fruit, but only one or two should be left on each plant at first, and more as the plants get older and stronger. The stopping of the shoots must be continued at every second or third joint from the last pinch, and also thinned out when needful. Crowding of the wood and foliage should always be avoided. The object of planting 2 ft. apart at first is only to secure a good crop of Cucumbers early by taking one or two fruits off each plant as soon as possible, but this space is too little ultimately for each plant, and when it becomes necessary every alternate plant may be removed to give the others more room. Watering must be attended to regularly. The bed should be kept moist, and when water is given it should be a thorough soaking till it runs out at the bottom of the bed, and should always be of the same temperature as that of the soil. Syringing in the morning and afternoon must also be attended to, and air more or less should be admitted according to the state of the weather. The roots should be top-dressed every two or three weeks with a little fresh soil. If these simple directions be carried out a supply of Cucumbers during the winter and spring will not be found a difficult matter. The Cucumber is an easy plant to grow; unlike the Melon, the fruit is not wanted ripe, but only when half swelled, and the way to obtain it is to keep the plants in a healthy growing state.

Cucumbers in Pits, &c.

Where hot-water pits are employed for growing winter Cucumbers it is a good plan to apply a thick lining of fermenting material round the pit; also a covering of mats or other warm material over the glass during the night: by these means less fire-heat will be required, and the plants consequently kept in a healthier condition. To train Cucumbers pieces of wire trellis-work should be fitted in each light about 1 ft. from the glass, the bed containing the plants being about 8 in. or 9 in. below this, which will afford greater facility for applying top-dressing; whereas if the ordinary mode of pegging down be adopted, top-dressing cannot be given without injury to the foliage. The greatest objection to pits for winter Cucumbers is the inconvenience of attending to the plants in severe weather; and plants are frequently allowed to run wild and get dry at the roots, in consequence of not being able to take off the lights when there is a continuance of frosty weather. Where there is no other convenience for growing Cucumbers in winter a few plants may be put into large pots, placed in corners of a warm house, such as Pine or plant stoves. The pots should be well drained, and filled three parts full of compost, adding a little at a time, as the plants require it, until the pots are full. Plenty of water must be given them, without causing the soil to become sodden, and when they are in bearing occasional soakings of manure-water will be beneficial in keeping them in a healthy state.

Summer and Autumn Cucumbers.

Plants put out in September will, if properly treated, continue in bearing until May or June; therefore, to have plants ready to succeed them, a sowing should be made early in April,

and grown in either houses, pits, or hot-beds, whichever is at hand; these will generally continue in bearing until August, by which time plants that have been put out in cold frames, such as those in which Potatoes have been grown, will be in bearing, and these, if liberally treated, will give a supply far into the autumn. They will, however, require to have linings applied, and be covered up at night when the cold nights set in. If thus treated they will last until late in October, by which time those planted for winter will be progressing towards fruit-bearing. Where a hot-water pit can be spared, a few plants may be put out in July or August, to give supplies during the early part of the winter.

Growing Cucumbers on Hot-beds.

Though hot-beds have been superseded to a great extent by hot-water pipes, they still occupy an important position in gardens, especially in those of moderate extent, and are often very serviceable as Cucumber and propagating frames combined. Hot-beds are, as a rule, rather difficult to manage properly, as the heat cannot always be efficiently regulated. A moderate and steady temperature is what is required, and this can be secured in a well-made hot-bed for six months. The materials required for a lasting hot-bed are stable litter and leaves in equal quantities: in the absence of leaves, use half-decayed hot-bed manure, refuse turf-choppings, or any other materials likely to moderate the fermentation of the stable litter—materials to be had in most establishments. The first consideration is the selection of a site for the bed, which should always be in a dry and sheltered situation. Nothing extracts heat so rapidly as cold winds; indeed, where a hot-bed is made up annually it is better to have it sunk two-thirds in the ground. It would be preferable, in fact, to have it wholly in the ground, but as the bed will settle down at least one-third of its height during the summer the frame would get below the ground-line, which would be inconvenient. For a frame 9 ft. by 5 ft. the pit would require to be 14 ft. long and 10 ft. wide; and if the bed were intended to last eight or nine months it should be quite 4 ft. deep, which, allowing one-third of the bed to be above ground, would give a total depth of 6 ft. of fermenting material. If the pit be double-boarded with strong rough deal so as to form a 2-in. cavity all round between the earth and the sides of the bed, the heat will last a considerable time longer, as the cavity prevents the bed from being robbed of its heat by the cold earth. Another advantage of having a pit for the bed is that the latter is made with greater facility, for it requires a skilled hand to build up a compact and permanent hot-bed on the surface of the ground. Whatever kind of site is prepared, the next step is to have the materials placed conveniently near. These may be thrown roughly together the first time, sprinkling plenty of water upon them if they be at all dry. In a week or ten days the heap will usually be found to be heating violently, when it should be turned over again, taking care to mix the litter thoroughly, adding more water if required. A week or so later it will want another turning, which as a rule ought to be sufficient to bring it into a fit condition for making up into a bed, even though it be heating strongly, for the temperature will subside a good deal after the materials are well trodden down. Where the hot-bed is the only accommodation the seed of course cannot be sown till the bed is ready; but where there is a hot-house or pit it is by far the best to sow the seed about the time the first preparations are made for making the bed; and when the bed is ready the plants will be strong and fit for planting. The seed may be sown in small pots, well drained, and the seeds covered with about ¼ in. of fine soil plunged in a bottom-heat of 75° or 80°, with a moist atmospheric heat of from 65° to 70° at night, and 75° to 80° by day. The seeds should not be watered for a day or two after planting, when they should be well soaked; and from this time forward the soil about the roots of the plants should never be allowed to get dry, nor wet enough to become sour. When the plants are up they should be placed near the glass to keep them strong and stocky, and should be planted out before they become pot-bound. In preparing the bed for planting the bottom of the frame should be covered with turves, grassy side downwards; on the top of these lay a ridge of soil the whole length of the frame. This should afterwards be levelled up, as the plants root out in both directions. Frequent soilings is an evil in hot-bed culture, for such operations cannot be performed without disarranging the foliage and injuring the plants. The bed being prepared, and presuming the bottom-heat to have subsided to about 75° or 80°, the plants should be planted, one in the centre of each light. If not done before, they should at the same time have their tops pinched off above the second or third leaf. After planting, with the assistance of linings, in the shape of stable litter and a careful economization of sun-heat, the bottom-heat may be kept at 70° at least, and the top-heat at 70° at night, and 80° or 85° with sun. In very bright weather a shading of thin canvas should be rolled over the frame during the hottest part of the day, but shading should not be resorted to more than can be helped. Air must be admitted at all times, and even in severe weather the sashes should be raised the thickness of a label to let the steam escape. The bed should be kept moist, but not sodden, and the plants should be sprinkled every afternoon in bright weather with soft, clean, tepid water. Under this treatment they will soon start into growth by sending out two strong leaders below where they were pinched. One should be trained towards the back of the frame, and the other towards the front, and when they have come within about 1 ft. of the sides of the frame they should be pinched again, which will cause them to throw out laterals, showing fruit in all probability which, with the exception of three or four on each limb, should be picked off, and the laterals stopped one joint beyond the fruit. If the foliage be large and vigorous, it will perhaps be found advantageous to cut out some of the laterals altogether. It is much better to thin out the foliage and wood frequently than to let the plants get overcrowded, and then cut out a great quantity of wood at one time. After this the training of the plants consists in laying the shoots out, so as to cover the bed, stopping them regularly, and disposing of them generally so as to secure the greatest amount of light and air possible to every leaf. The plants should not be allowed to bear too heavily if expected to keep up the supply for [any length of time. When cropped moderately, and the fruit cut as fast as it is ready, the plants bear continuously from April to November. Mr. Groom, of Henham Hall, adopts a very good method of making hot-beds; they are made with hollow bottoms, which are advantageous in many ways. He builds up corner piers of brickwork to the required height, say 2 ft. in front and 2½ ft. at back; strong bearers are then laid lengthways on these piers and stout planks crosswise on the bearers to form a floor, leaving sufficient apertures for the heat to pass through. The frame is then set on and a layer of leaf-mould put into it 2 in. or 3 in. thick to keep down the steam. A load of strong, fresh manure is then put under the frame and enclosed all round with litter or garden refuse of any kind that may be at hand. In the course of a week the heat is up and the bed fit for planting, and by taking away or adding to the heating material underneath the temperature may be regulated to a few degrees. Where brickwork cannot be used for the piers, stout posts will answer the purpose equally well.

Varieties of Cucumbers.

In consequence of so many so-called new varieties of Cucumbers having been recently added to our lists, it is almost an impossibility to say with any amount of certainty which is the best to grow. These varieties of recent introduction are invariably long-growing kinds, suitable for exhibition purposes, but far from being useful to growers whose aim is to keep up a constant supply. For general use a Cucumber 12 in. long is just as good as one twice that length, and where one long one is grown, two or three short ones may be had with less injury to the plants than the long one. Where, however, Cucumbers are placed upon the table whole, one likes to see a creditable fruit; therefore in this case a long-growing variety is to be preferred; but where, as is generally the case, they are cut up before being sent to table, flavour is the only thing that need be studied, and short Cucumbers generally have the advantage in this respect. Perhaps, taking all things into consideration, there is no better variety to suit all purposes then Rollisson's Telegraph, when it can be had true. There are also many others called Telegraph closely allied to it that

are excellent, but the former is the best. There are two or three old varieties which we now seldom see, but that are not excelled for flavour and cropping qualities: we allude to Lord Kenyon's Favourite, Masters' Prolific, and Hedsor. These are all short sorts, but heavy croppers and of excellent flavour; the latter, I believe, is the only variety grown at Frogmore, and it answers exceedingly well as an all-the-year-round cropper. Amongst the best of the long varieties may be mentioned Pearson Long Gun, a fine variety when true. Mr. Pearson used to make a speciality of growing this variety for seed, and so careful was he not to cross it with any other kind, that he would not allow any other to flower in his garden whilst growing seeds of Long Gun. Tender and True is an excellent kind for exhibition, also Marquis of Lorne and Daniels' Duke of Edinburgh. Blue Gown is a good black-spined sort; but where only one kind can be grown, we should recommend Telegraph or Lord Kenyon's Favourite. When selecting the kinds of Cucumbers for cultivation, we must not forget to choose those best adapted for our several requirements. Many varieties will do well in houses in a high temperature, but are useless for growing in frames, and *vice versâ*. Some will succeed without bottom-heat, and in a very low atmospheric temperature, whilst others require a large amount of both to bring them to perfection. This is generally the case with long-growing kinds. Fertilization was formerly considered necessary for the setting of Cucumbers, but it has long been proved it to be needless. Indeed, fruits intended for eating are better without, as the seeds in them are not so numerous. For seeding purposes fertilization is decidedly required, if good, heavy seed be needed.

Soil and Manure.

A great depth of soil is unnecessary for Cucumbers; indeed, it is to be avoided, for they will succeed far better if they be planted in a little soil at first, and receive frequent top-dressings afterwards; for planting, 8 in. or 10 in. of soil is quite deep enough if the bed receive slight dressings of stable manure mixed with soil to keep the plants in a vigorous state of health. Good turfy loam mixed with rotten manure is the best material in which to plant them, but the dressing should be of a richer nature. Many people use a quantity of peat mixed with the loam for winter Cucumbers; others use leaf-mould, but it is too light; the plants thrive well in it, but do not last so long nor fruit so freely as when grown in more holding soil. Cocoa-nut fibre refuse is highly recommended by some as a good dressing for Cucumber beds, but stable manure is by far the best kind of surfacing, and may be applied fresh from the stable, and if a little old mortar or brick rubbish be mixed therewith it will be better still. Weak guano-water is the best kind of stimulant to apply to Cucumbers; other kinds of manure-water are said to affect the flavour of the fruit. I have found a sprinkling of Standen's Manure over the surface of the bed highly beneficial to plants becoming nearly exhausted. Abundance of water is at all times necessary to Cucumber plants growing under advantageous circumstances.

Growing for Exhibition.

Cucumbers intended for exhibition should be grown on plants just coming into fruit, as the best fruits, as a rule, are produced from young plants in full vigour. Two fruits of a size are quite sufficient for one plant to bear, though smaller ones may be coming on in succession. Vigorous old plants will also produce fine fruits if kept free from bearing for a short time, and young shoots encouraged. The straightest fruits are produced in sunless weather, but shading has no effect in sunny weather to keep them from growing crooked. The best plan is to give air very freely and to keep the surface of the bed and path moistened. Care must be taken to tie up the fruit, lest the bloom, which is as indispensable in Cucumbers as in Grapes, should be in any measure destroyed, or the flower at the end displaced. It is of the first importance to have them fresh; better to sacrifice a little in the way of size than to have them past their best. It is also a point of importance to have a brace equally matched. Cucumbers for exhibition are sometimes grown in glass tubes, in order to have them straight, but it is just as good a plan to have a piece of flat lath and tie the point of the fruit gently to it whenever it threatens to grow crooked; care must, however, be taken not to mark the fruit with the tying material. A box should be made about the width the brace will fill, and about their length, in which, when cut, place them immediately without afterwards disturbing them.

Cucumber Culture in the Open Air.

Any one having a warm garden may, with a little contrivance, have Cucumbers from July to the middle of October. A warm situation, with a southern aspect, should be chosen for them. Then remove 1 ft. or 2 ft. of soil over a surface a yard or so wide, fill up the space so formed with some heating material, such as leaves, stable litter, tan, chips, or Cocoa-nut fibre refuse. Cover this over with the soil removed; the seeds may then be sown on the bed, or plants previously prepared may be planted. The latter is by far the best course, as by this means much time is saved, and the heat of the artificial bed quickly pushes on the plants. The seeds for this purpose should be sown under glass, if possible, two or three weeks before this growing bed is formed in the open air. As soon as the plants have formed a rough leaf beyond the two smooth cotyledons, they should be potted off singly and deeply, so as to bury all the stem up to the cotyledons. By the time the plants have filled a 60-sized pot full of roots, they will be in the best possible condition for planting out on the bed already described. After planting, it is a good practice to cover the plants over with a bell-glass, cloche, or hand-light, or any other kind of glass-protector, until they get a firm hold of the soil. This helps them the sooner into free growth and plentiful fruit-bearing; but still the glass covering may be dispensed with. In that case, however, it will hardly be safe to plant out until the end of June, or, if planted earlier, a flower-pot or old hat-box, or a double paper protector had better be placed over them every night until all danger from frost is over. One of the simplest protectors for such plants is a wooden box 6 in. or 8 in. square, and 10 in. or 1 ft. deep, with the upper side covered with oiled calico drawn tight. But, by planting strong plants late, we may dispense with all these coverings, and also with the artificial bottom-heat, although it undoubtedly affords a powerful stimulus to growth. Out-of-door Cucumbers may either be grown on the ground or slightly raised above it on trellises of various sorts, or they may be trained on walls and fences or other vacant places. The surface of the earth is, however, perhaps the best position for them, for there they have congenial warmth, and the leaves are strengthened by the evaporation of moisture from the ground. The foliage as well as the roots are also readily watered in such a position, and the roots are so shaded as to protect them from being scorched by the sun. The necessary training, stopping, and cutting of the fruit are likewise easily attended to when the plants are allowed to ramble freely over the surface. Out-of-door Cucumbers are generally allowed more freedom of growth than those in frames or houses. In the latter the plants have to be kept pinched back for want of space and to keep the plants in bearing as long as possible. But in the open air, as the object in view is to obtain a quantity of small fruit as quickly as possible, the plants may be very much left to themselves, with the exception of a weekly overhaul to cut, water, &c. Cucumbers do well trained up south or west walls, planted either on the top of small heaps of fermenting material, or simply in warm borders. Well watered, carefully stopped and trained, many of the shorter frame Cucumbers will do fairly well in such positions, and even the long varieties, such as the Stockwell Long Ridge, the Long Prickly, &c., do tolerably well. The plants must be watered freely at the roots, and be sprinkled overhead once or twice a day. Cucumbers may also be successfully grown between rows of Raspberries or espalier fruit trees. A good spit of soil should be taken out where each of the plants is to be put, and a good spadeful of rotten manure worked in the hole. The plants may be put 3 ft. apart, and trained horizontally, so as to meet each other, when they should be stopped. They will then soon throw out side-shoots, which should be kept regularly pegged down to the ground. Give plenty of water in dry weather, and abundant crops of Cucumbers will be the result. Even those who have no garden may grow their own

Cucumbers for pickling, salad, and eating, on a stone yard or balcony. The varieties already named, as well as the Short Prickly and Cluster Gherkin, may be grown in pots, boxes, or vases, and would prove quite as interesting, and almost as ornamental, as many of the common plants often found in such positions. In almost any soil Cucumbers will grow, provided it is open and rich enough; though, of course, the orthodox mixture of turfy loam and rotten manure is the best for those in pots and boxes out-of-doors. The pots and boxes should be well drained, a matter even of more importance than the soil, for the latter can always be enriched by manure-water. Care must, however, be taken not to over-stimulate out-of-door Cucumbers, as gross growth is apt to invite mildew, one of the greatest enemies to Cucumbers in the open air.

Gherkins.

These are grown for pickling, and should be cut when they are from 2 in. to 3 in. long. Market growers generally allow them to be larger. They may be easily grown out-of-doors in warm situations. If the plants are raised in heat in May and planted out-of-doors in June, and hand-lights placed over them for a week or two, success is more certain. Some gardeners plant them in spare frames during the summer, but they do almost as well out-of-doors, inasmuch as they keep more free from insects when exposed to air and rains. Market gardeners sow in the open air at once in well-prepared ground, and plant them 6 ft. asunder and 10 ft. from row to row; and one grower has been known to cut 20,000 fruit in one day, which are quickly bought up by the pickle merchant. The same treatment applied to out-door Cucumbers answers for these, only that Gherkins do not require to be stopped.

Insects and Diseases.

Cucumbers are liable to red spider, thrips, green fly, mildew, canker, and various other diseases, the only remedy being that of keeping the plants in as vigorous growth as possible. When mildew attacks the Cucumber it is generally the result of insufficient ventilation and too low a temperature. When it does appear dusting thinly but evenly with flowers of sulphur through a piece of muslin cloth is the only cure. Thrips are the most terrible of the insect enemies which attack the Cucumber; for these and also for green fly, which is sometimes troublesome on they oung growths, fumigating with Tobacco is usually resorted to; but the foliage of the Cucumber is so tender, especially when forced, that fumigation, unless done very carefully, is a cure which is often worse than the disease, and should never be attempted by the inexperienced. For these pests, and also for red spider, it will generally be found best to apply the "Antidote for Red Spider, Thrips, and Green fly," by putting a small quantity in the water with which the plants are syringed. This will, if persevered in, obviate the necessity of fumigation, and keep the foliage fresh and green. Canker in the stems may be stopped by filling up the fissures with quicklime. S.

Dried Tomatoes.—Housekeepers in the country who have many Tomatoes can, according to the "American Agriculturist," easily preserve a large quantity of this very easily-cultivated fruit by drying it. This method requires little outlay, and comparatively little trouble. Scald and peel the Tomatoes, as for canning. Boil them slowly in a porcelain kettle or stone jar until the original quantity is reduced one-half. Then season them in the proportion of a teaspoonful of salt, and half-a-cupful of sugar to a gallon of stewed Tomatoes. Spread on plates and dry quickly without scorching. As the moisture dries away, and the stewed fruit loses shape, scrape it up so that both sides may dry, and let the contents of several plates, heaped up lightly, stand in bright sunshine a little while before putting away. Store in bags and keep dry. When wanted for use soak them in a quantity of water for several hours, or overnight. Stew in the same water long and slowly—three or four hours—keeping boiling water at hand to add if it grows thick, and so is in danger of burning. It should be quite thin when done, and may be thickened with bread crumbs and seasoned.

Brewers' Hops v. Celery Fly.—Is it true that the fly will not come near Celery mulched with brewers' Hops? Such has been asserted to be the case; but I should like the opinions of some of your correspondents on the subject.—Q.

GARDEN RECEIPTS.

Nails.

When nails begin to rust it is almost impossible to stop them from becoming eaten away in a very short time; in this case prevention is better than cure. Mix 1 pint of linseed oil with 2 oz. of black lead, stirring until the whole is thoroughly incorporated; heat the nails red-hot and steep them in the mixture. They should then be well drained and shaken up in an old nail-bag until dry. The linseed oil and black lead cover them with a film of varnish which is impervious to wet. The above proportions will serve for an almost indefinite quantity.

Nature Printing.

There are three different methods of obtaining copies of flowers and leaves from the flowers and leaves themselves. One is by dabbing them with printing ink and obtaining an impression of them by pressure as if they were type or wood blocks; another is by obtaining photographic impressions upon prepared paper; a third, by laying the leaves or flowers on a copper plate and passing the whole between powerful rollers, thereby producing an *intaglio* from which impressions like those from a copper or steel plate are taken. This process was well carried out some years ago.

Those who have access to a laundry roller press, or an ordinary copying press, the following method of direct printing may be adopted:—The best paper to use is ordinary wove paper without water-marks, such, in fact, as is used for book printing. Those who can afford to be luxurious may use thin drawing paper. First select the leaves, and then carefully press and dry them. If they be placed in a botanical press, care must be exercised not to put too great a pressure on the specimens at first, or they will be spoiled for printing. An old book is the best for drying the examples to be used; then get a small can of printer's or proof ink, and a small leather dabber, which can be bought for a few pence at any shop where wood engravers' materials are sold. Take a bit of ink about the size of a Pea, and work it on a small piece of slate or glass with the dabber until it is perfectly smooth. A drop or two, not more, of linseed oil will assist the operation. Having worked the ink perfectly smooth, give the leaf a thin coating, being careful to spread it equally, not to dab it on in blotches, or the clear effect will be lost. Having applied the ink, take a sheet of paper of the size required, and lay the leaf ink downwards upon it, placing it between the leaves of an old book, which must then be subjected to a moderate pressure in a copying press, or passed between the rollers of the washing machine. If a press be not at hand, lay the book on the floor and stand upon it for a few seconds, an operation which answers the same purpose. Impressions can be taken with greater rapidity by this process than by any other, and a very little practice will enable any one possessing ordinary ingenuity to succeed in producing them. Soft book paper is the best for the purpose, and, previous to using it, place a few sheets between damp blotting-paper, which causes it to take the ink still more readily. At first you will find that you lay too much ink on the leaf, which then produces too dense an impression. After a little practice you will feel how much ink to lay on each description of leaf. If you find the impression too black, use the leaf once again without inking it. If the midrib of the leaf be too thick, so that the parts near it do not come into contact with the paper, it must be shaved down with a sharp knife. Composite leaves, as of the umbelliferæ, should be divided, and their parts printed separately; other details will soon be learnt by practice.

—— M. Bertot, of the Paris Academy, has just made known a simple method of taking impressions of plants requiring only a large sheet of paper, some olive or other oil, black lead or powdered charcoal, and resin. The paper is first lightly oiled on one side, then folded in four, so that the oil may filter through the pores, and the plant may not come into direct contact with the liquid. The plant is placed between the leaves of the second folding, and in this position pressed (through other paper) all over with the hand, so as to make a small quantity of oil adhere to its surface. Then it is taken out and placed carefully on white paper; another sheet is placed above (since two impressions can be taken), and the plant is pressed

as before. On now removing it an invisible image remains on the paper. Sprinkle over this a quantity of black-lead or charcoal, and distribute it in all directions, as in applying sand to writing; the image then appears in all its parts. With an assortment of colours the natural colours of plants may be reproduced. To obtain fixity, resin is previously added to the black lead in equal quantity; the impression is fixed when it is exposed to a heat sufficient to melt the resin. The method of reproducing leaves by photography will be found under that heading.

Paints.

Paints are pigments ground with oil to a thick paste, ready to be thinned down afterwards with oil or turpentine to a consistence adapted for application with a brush. In mixing or thinning down paints, boiled oil is used for outdoor work, except for the decorative parts of houses, when a portion of turpentine and pale linseed oil is often added; while for indoor work generally linseed oil, turpentine, and a little driers are used. The smaller the proportion of oil the less will be the gloss, and the greater the ultimate hardness of the coating. For flatted white, &c. (the colour being ground in oil), it requires but a slight amount, for the object is to have it dead or dull. The best driers are ground litharge for dark colours, and ground sugar of lead for light ones. To preserve mixed paints in pots from skinning over, they should be kept constantly covered with water, or, what is better, with linseed oil. Brushes when out of use may be laid in clean water. When required for another colour, they may be cleaned with some oil of turpentine. The best preservative for old woodwork, and in fact all woodwork that is exposed much to the weather, is whiting, mixed in pure, raw linseed oil; let it stand until it is thoroughly mixed, then reduce with oil and add sufficient driers. This makes a hard, durable paint for the first coat; reduce it to an ordinary thickness for priming, and apply with an ordinary brush. It must be thoroughly worked up together, so as to remove all the lumps of the whiting. For hot-water pipes, ordinary Brunswick black may be used, or lamp-black and boiled linseed oil. The lamp-black should be made red-hot, and when cooled should be beaten up very fine, adding oil until the mixture is sufficiently thin to be applied with a painter's brush. The pipes should be warm during the process.

For zinc work, to which it is difficult to make paint adhere, and which rapidly oxidizes when exposed to air and moisture, Dr. Böttger recommends a solution of 1 part of chloride of copper, 1 part of nitrate of copper, and 1 part of chloride of ammonium, 64 parts of water, and 1 part of commercial hydrochloric acid. This solution acts as a sort of mordant. It is put on with a wide brush over the zinc, which immediately becomes a deep black colour, which changes in the course of twelve or twenty-four hours to a grey, and upon this grey surface any oil-paint will dry and firmly adhere. Summer heat and winter rain will have no effect in disturbing this covering, which affords complete protection to the zinc.

For painting glass-houses, the best thing to use is white lead mixed with linseed oil. The wood should be thoroughly dry when put on, for internal damp soon works out and blisters and destroys the paint. The long, dry period in summer is the best time to apply it. In the case of new houses the woodwork should have a good coat of paint before it leaves the workshop, and other coats should be added as the weather will permit. To allow the wet to penetrate the wood before it is painted is a sure means of starting decay, which no after-attention will be able to remedy. Few greenhouses or conservatories are improved in appearance by being painted in too many colours, two being generally sufficient; for instance, a pearl-white, light lemon, or stone colour for the wood, and a light blue or French grey for the iron. These delicate colours should only be used in conservatories and other places where the atmosphere is dry.

In stoves, forcing pits, and similar structures the woodwork should be painted a dark stone colour, so as not to show the dirt too easily; for the same reason the outsides of all houses should be of a darker hue than the insides. The outside of a house should be painted every three years, the inside every six years. Nothing is gained by letting the paint drop off before it is removed. Greenhouses and similar structures are now-a-days built of such slight materials that the only means of preserving them is to keep them constantly well painted. For darkening the glass of greenhouses a mixture of whiting, Brunswick green, and skimmed milk forms the best material, the thickness of course depending on the exposure of the glass; or whiting and skim milk alone may be used, composed as follows:—A piece of whiting the size of a Walnut reduced to a fine powder and thoroughly mixed with 2 or 3 quarts of milk. It is better to make a trial on a piece of glass first. Let it dry, and add to the milk or whiting as less or more shading is required. If it be put on quickly and thinly by one man with a brush and another follow with a dry duster-brush, merely daubing it quickly with the points of the dry brush, the shading will have the appearance of shaded ground glass, and look neat.

A practical authority on house painting states that paint applied to the exterior of buildings in autumn or winter will endure twice as long as when applied in early summer or in hot weather. In the former case it dries slowly, and becomes hard like a glazed surface, not easily affected afterward by the weather, or worn off by the beating of storms. But in very hot weather the oil in the paint soaks into the wood at once, as if it were a sponge, leaving the lead nearly dry and ready to crumble off. This last difficulty, however, might in a measure be guarded against, though at an increased expense, by first going over the surface with raw oil. Furthermore, by painting in cold weather we escape the annoyance of small flies which invariably collect during the warm season on fresh paint.

Pear Tree Slugs.

The Pear tree frequently suffers severely from the attacks of a disgusting-looking and offensively-smelling viscid larva, black like a little leech, which seems glued and immovable on their leaves, and which eats the parenchyma from one of the sides, usually the upper side, beginning not at the edge, but in the middle, and leaving the anastomoses of the smallest nerves and the epidermis of the underside intact, so that the leaves which it has attacked resemble a piece of very fine lace. It has a form and appearance which induced Reaumur to give it the name of *ver-limace*, slug-grub or slug-worm. When, at the end of the autumn, it has acquired its full size, it has a slight resemblance, with its head drawn under the first ring and its tapering extremity, to a small tadpole. It is provided with twenty feet, but it is necessary to detach it from the leaf in order to see them. After having changed its skin four times the black, gluey, slimy surface disappears, and it becomes of a yellow orange colour; it descends the tree, and makes for itself a cocoon with grains of earth joined by some threads of silk, which, when once it has hardened and assumed its final state of leather-like toughness, is insoluble in water, and forms a perfect protection from wet. In this cocoon the slug resides during the remaining portion of the autumn and winter, and until the following summer; it is contracted in size, but otherwise unchanged in character. Its change to a chrysalis does not take place until spring has far advanced, and then that state is but of short duration; fourteen or twenty days suffice to mature the perfect insect, and at the expiration of this it emerges from the tomb, and the same cycle of existence is re-commenced and re-completed as before.

A series of experiments on the best way of destroying this pest was made a few years since in America, where it is a much more formidable plague than it is in England. As soon as the slugs were observed at work in spring they were treated to a plentiful supply of dry sand, thrown up into the higher branches with a shovel, and over the lower ones through a sieve. The sand stuck thickly to the slimy skins of the grubs, completely covering them. Supposing the enemy conquered, no notice was taken of him for some days, when he was found to have recovered from the assault, and to be as vigorous as ever. It was then determined to test the sand experiment on a smaller scale. Several small branches of Pear trees were selected and marked, on each of which were six slugs, and these were well powdered over, and completely covered with sand. On examining them it was found that they had shed their sand-covered skin, and had crawled out as slimy as before. The sand was applied a second and a third time, with similar results. Ashes were next tried in the same manner

as the sand had been, and were found equally ineffectual. Ashes and sand being both useless, the slugs were treated to a strong dose of hellebore and water, which soon finished them. On the 13th of August a branch of another Cherry tree was plucked, on which there were sixty-four slugs. This branch had only nine leaves, so it may be supposed it was thickly inhabited. A dose of hellebore and water was showered on them of about the usual strength—1 oz. to the pailful—when they soon manifested symptoms of uneasiness, twisting and jerking about in a curious manner. Many died during the day, and only six sickly-looking specimens remained alive the following morning, and these soon after died. In the following year by the last week in August the second brood of slugs was hatched, and those trees which had previously escaped were all more or less infested. A raised platform was rigged up in a one-horse cart; on this was placed a barrel of water in which 1 lb. of powdered hellebore had been mixed, and from this elevated stand the mixture was showered lightly on the trees from the rose of a watering pot. It was astonishing how quickly the trees were cleared by this method; scarcely a slug could be found on a tree the morning after the application had been made, and 10 lb. of hellebore, with five or six days' work of a man and horse, served to go over the whole ground. Powdered hellebore has been successfully tried in England on a small scale, but there is an apparent difficulty in raising the water to a sufficient height to be of much service among the giant Pear trees of Worcestershire and Herefordshire. A practical Canadian Pear grower, who has had to contend with frequent swarms of these insects in his Pear orchards, states that he has found nothing so good or so easily applied as powdered hellebore, 1 lb. of the powder mixed with a barrel of water being strong enough. His mode of operating is as follows:—The barrel of hellebore and water is placed on a one-horse cart, and on the cart is erected a suitable platform for the operator, who is supplied with an ordinary watering-can. From his elevated position on the platform he showers the death-dealing liquid on the foliage, driving from tree to tree as the sprinkling is effected; a light shower is all that is needed, and effectually cleans the trees. Passing up one side of a row and down the other side where the trees are not very large, an active man can easily operate on from 200 to 300 in a day. Where the trees are too large to admit of their being entirely reached in the manner described, the liquid can be effectually applied with a garden syringe.

An English grower states that his Pear trees having been attacked two years ago, he found lime-dusting most effectual, using for the purpose an old-fashioned tin pepper-box. Ten days later they received a second dusting, and evidently a severe lesson had been administered to them, inasmuch as the next year only a very few made their appearance—so few, indeed, that they were easily destroyed by hand-picking. This summer he has kept a vigilant look-out, and has not been able to discover a single one on his trees, whilst the fruit crop is most abundant and promising. Mr. Hobday, of Ramsey Abbey, considers that the best way of getting rid of the slugs is by deluging them with strong soot and lime-water, applied forcibly by means of the garden-engine at pretty frequent intervals.

Pot Maggots.

Flower pots—cutting-pots especially—are frequently infested with the maggots of the destructive beetle Biorhyncus saliatus. Hand-picking at the roots is the best remedy when they have established themselves in pots; but for cutting-pots the soil used should be examined, and, where necessary, roasted, which ought to keep the pots free from them. Plunging the pots in boiling water, where the plants are strong enough to bear it, will also eradicate the pest.

Potato Beetle.

Although the Colorado Beetle has not yet made its appearance in this country, it is said to be steadily working its way eastward, and we know not at what moment it may cross the ocean; it can do no harm, therefore, to give a remedy for this formidable pest. The best remedy that can be recommended is Paris Green, known better in this country as Scheele's Green, *i.e.*, arsenite of copper, mixed with ashes or flour, in the proportion of 1 part to 12 or 15 parts. It should be dusted over the plants in the morning when the dew is on the foliage, and should always be repeated after rains. Three pounds of Paris Green to about 40 lb. of flour, ashes, or air-slaked lime will be enough for 1 acre of Potatoes.

Putty.

Glaziers' Putty is made by working ordinary whiting into a paste with drying oil. Common Putty becomes exceedingly hard with age, a circumstance which renders the removal of glass from sashes peculiarly difficult. Old Putty may be softened by using a paste of caustic potash, easily prepared by mixing carbonate of potash or soda with equal parts of freshly burnt quicklime, which has previously been sprinkled with water, so as to cause it to fall into powder. This should be mixed with water to a paste, and spread on the Putty to be softened. Where one application is not sufficient, it is repeated. In order to prevent the paste from drying too quickly, it is well to mix it with less water, adding some soft soap instead.

By the application of a hot iron the Putty becomes so soft that the glass can be removed by the fingers and the Putty easily scraped away. All that is required is a block of iron about 2½ in. long by 1½ in. square, flat at the bottom, and drawn out for a handle, with a wooden end like a soldering-iron. When hot (not red-hot) place this iron against the Putty or flat on the glass, and pass it slowly round the sides of the square. The heat will so soften the Putty that it will come away from the wood without difficulty. Some of it may be so hard as to require a second application of the hot iron, but one experiment will give sufficient instruction to meet all difficulties.

C. W. Quin.

Rural Education in France.—Mr. Roger Leigh, in an address recently given at his Harvest Home at Barham Court, gave an interesting description of the course adopted with respect to rural teaching in France, pointing out that the children attending 30,000 primary schools in the rural districts received instruction in the culture of the soil. The child was shown the soil which best suited the plant to be cultivated; he was made to prepare it for planting, to sow it, to free it from weed, to wage war against insects and grubs, and finally to record in his school books the advantages derived from the selection of special soils, the application of new manures and variations in the time of planting. Those lessons were never forgotten, and the allotment of the French peasant was made to produce a variety of vegetables fit for any man's table. The various agricultural societies throughout France cordially seconded the Government in its efforts, by bestowing on the pupils and the master, counsel, assistance, and prizes. But in England all the energies of their representative system appeared to be absorbed by the consideration of the religious doctrine which should be taught in schools, while the material objects for which education was also required, were overlooked.

Destruction of Vineyards in France.—The French Chambers are entering into the lists with that redoubtable enemy of France, the phylloxera, whose ravages constitute a national calamity. The minute and destructive insect in question made its appearance here in the year 1865, coming no one knows whence, and since that date it has managed to destroy a third of the French vineyards—to ravage a superficies of 600,000 hectares (2½ acres each), and consume 12,261,000 hectolitres of wine of 22 gallons each. The damage done this year is set down at £5,500,000, and this damage will go on increasing unless Parliament can succeed better than science and M. Dumas in arresting the progress of this minute scourge. Never has the Vine had such an enemy since the time of which Béranger sang—

> When Brennus came back here from Rome,
> These words he is said to have spoken:—
> "We have conquered, my boys, and brought home
> A sprig of the Vine for a token!"

The only wonder is that wine remains as cheap as it is, and that, in spite of heavy city dues, really good ordinary wine can be obtained in Paris for a franc a bottle. A reward of £12,000 is still open to any one who shall discover an effectual means of destroying the phylloxera, with whose manners and customs science is now intimately acquainted.—V.

SOCIETIES AND EXHIBITIONS.

POTATO EXHIBITION AT ALEXANDRA PARK.

September 27 and 28.

This show was in every respect a good one, over 3000 dishes of Potatoes having been exhibited. Mr. Porter, of Old Meldrum, N.B., obtained the principal awards in no fewer than four of the more important classes, including the first prize in Class A for twenty-four varieties. Mr. Donaldson and Mr. Pink had also excellent collections. The best Potato in the show this season as well as last year was Porter's Excelsior, but it was nearly equalled by a new variety from Mr. Charles Turner named Schoolmaster, which promises to be an excellent Potato either for culinary requirements or for purposes of exhibition. Taken altogether, the tubers were larger than those exhibited last year, a singular fact, considering the dry season which we have had, and, as regards quality, it would have been difficult to have found more perfect tubers than those shown by Messrs. Porter, Donaldson, Pink, Ironside, and Wildsmith. As at last year's exhibition, examples of misnaming were not uncommon, but it is difficult to see how this can be wholly avoided; thus, in several cases a variety, to all appearance identical with Porter's Excelsior, was shown under the name of Early Handsworth; and we are left to infer either that Excelsior and Early Handsworth are the same kind under different names, or that the tubers so exhibited were in reality Porter's Excelsior, misnamed Early Handsworth.

Certificates.—These were awarded to the following:—

Alexandra Kidney (McKinlay).—A promising white variety.

Garibaldi (Ross).—A red Kidney of good shape and appearance.

International (Fenn).—A white Kidney, seemingly of good quality.

Brownell's Superior (W. J. Baker).—A large red American Kidney of promising appearance.

Lye's Favourite (Lye).—A round white variety having pink-blotched eyes; a very handsome tuber for exhibition purposes.

In the class of twenty-four varieties of Potatoes, nine tubers of each, Mr. Porter, of Old Meldrum, was first with well-grown tubers, among which we noted Napoleon, Wonderful Red, Blue Ashleaf, Crimson Walnut-leaf, Early Vermont, Grampian, Select Blue, and Early Emperor: the above were all red varieties. Among the white kinds were Model (a handsome pebble-shaped tuber), Early, Victoria, Climax, Porter's Excelsior (larger tubers than those shown last season, but not so handsome), Rector of Woodstock, Bresee's Prolific, Champion, Early King, Snowflake, Ashtop Fluke, Ashleaf, Baron's Perfection, and one or two others. Mr. J. Pink, of Ley Court, was second with smaller tubers, but in quality and suitability for table they were really very excellent, more so in fact than those in the collection to which the first prize was awarded. Among white kinds sent by Mr. Pink we noted Berkshire Kidney, Early Goodrich, Snowflake, Rector of Woodstock, Bresee's Prolific, Birmingham Prizetaker, Porter's Excelsior, Coldstream, Giant King, and Prince of Wales, all shapely, shallow-eyed tubers; among the red sorts were Early Vermont, Vermont Beauty, Red Emperor, Bountiful (a well-formed Kidney), and Late Rose. The otherwise select appearance of this group was marred by the introduction of three varieties, namely Blanchard, Scamles' Glory, and Ruby, the two former dirty-looking, purple-eyed kinds, and the last a deep-eyed red Kidney. Mr. J. Lye, of Cliffe Hall, Darges, was third with a well-grown lot of tubers, Mr. Peter M'Kinlay being fourth with what appeared to be a better collection than the last: in this class there were fifteen exhibitors. In the class of eighteen varieties of Potatoes, nine tubers of each (first prize a silver cup given by Messrs. Sutton & Sons), twenty-four collections were staged, Mr. Donaldson, Keith Hall, Inverurie, N.B., being first with good tubers. Among red sorts we noticed good dishes of Carter's Main Crop, Early Rose, Scotch Blue (an excellent old variety), also of the old Long Blue, Fenn's Bountiful, and a large pebble-shaped red named The Countess; white varieties were Early King, Goodrich, Snowflake, Rector of Woodstock, Bresee's Prolific, Early Handsworth (which, as shown here, is surely the same as Porter's Excelsior), Yorkshire Hero, Bresee's Peerless, Paterson's Victoria, and a variety named York Regent, but more like Early Goodrich. Mr. W. Finlay, Wroxton Abbey, Banbury, was second, with good tubers, the best dishes being Rector of Woodstock, Edgcott Seedling, a clear-skinned sort closely resembling Snowflake, Myatt's Prolific, and Bresee's Prolific. In the class of twelve dishes of Potatoes, English varieties, nine tubers of each (prizes given by Mr. Abbiss), Mr. W. Porter was first, with a fine collection, in which we remarked Blue Ashleaf, Round Blue, Bountiful, Crimson Walnut Leaf, and Grampian among the red kinds; the best dishes of white being Excelsior, Early King, Champion, Ashtop, and Rector of Woodstock. Mr. Ironside, Keith Hall, Inverurie, was second with The Countess, Fenn's Bountiful, Carter's Main Crop, Scotch Blue, and Coloured King. The best white dishes were Early Handsworth, Ashleaf, Yorkshire Hero, and Victoria; Mr. Minchin, The Nurseries, Hook Norton, was third with good tubers. In this class there were in all eight exhibitors. In the class of twelve dishes of American varieties, nine tubers of each (first prize given by Messrs. Daniels, Norwich), there were eleven competitors, Mr. Jas. Pink being first with the following sorts:—red—Early Rose, Ruby, Brownell's Beauty, and Early Vermont; white—King of Earlies, Eureka, Climax, Bresee's Prolific, Early Goodrich, Snowflake, Bresee's Peerless, and a pink-eyed variety named Oneida; Mr. Lumsden, of Bloxham Hall, was second with very large tubers, among which we observed Calloo, Extra Early Vermont, Willards, Brownell's Beauty, Vermont Beauty, and Late Rose. The best dishes of white kinds were Early Goodrich, Breadfruit, Bresee's Peerless, and Snowflake; Mr. Minchin was third, his best dishes being Early Paragon, Late Rose, Hundredfold, Fluke, and Snowflake. In the class of nine varieties, nine tubers of each (prizes given by Mr. J. Coutts, Covent Garden), Mr. Porter was first with Early King, Ashtop, Snowflake, Climax, and Excelsior, in splendid condition; red kinds consisted of Napoleon, Round Blue, and a pink-eyed sort named Golden Eagle. Mr. W. Finlay was second with Giant King, Bread Fruit, Snowflake, and Ashtop Fluke; the red sorts being Vermont Beauty, Compton Surprise, Late Rose, and Hundredfold Fluke: in this class there were nineteen exhibitors. In the class of six dishes, nine tubers of each (first prize, a silver cup, given by Messrs. Carter & Co., High Holborn), Mr. Porter showed six handsome dishes of smooth and shapely tubers, the varieties being Porter's Excelsior, Early King, Crimson Walnut-leaf, Ashtop Fluke, Climax, Excelsior, and Early Emperor. Mr. Littlejohn, of Corsendal House, Aberdeen, was second with Smith's Curly, Handsworth or Porter's Excelsior, Champion, Purple Ashleaf, King Kidney, and Red Emperor: about thirty collections were shown in this class, most of the tubers being in every way excellent and free from disease. In the class of six dishes, three round and three kidney, nine tubers of each (first prize given by the Lawson Seed Company), Mr. Porter again took the lead with handsome tubers of Excelsior, Early Emperor, and Prolific, all shapely, shallow-eyed kinds, the kidney varieties being selected Ashtop Fluke, Blue Ashleaf, and Early King. Mr. Littlejohn was second with handsome tubers of Early Handsworth, Champion Kidney, and Purple Ashleaf: sixteen collections were shown in this class. In the class of four dishes, nine tubers of each (prizes given by Messrs. Hooper & Co., Covent Garden), twenty-five collections were staged, the best being furnished by Mr. Miller, of Northdown, Margate, who showed Carter's Main Crop, Ashtop Fluke, Snowflake, and Bread Fruit. Mr. Lumsden, who was second, had Excelsior, Carter's Ashtop Fluke, Main Crop, and Prince Teck: some very coarse tubers were shown in this class. In the class of two dishes, English varieties, one round and one kidney, nine tubers of each (prizes given by Mr. T. K. Freeman, Pinner Wood), there were eighteen competitors, the tubers on the whole being very good. The best came from Mr. Finlay, who had Lapstone and Rector of Woodstock. Mr. Frisby, Blankney, Sleaford, was second with Lapstone and Excelsior. Mr. Littlejohn, who was third, had Handsworth Early and Champion Kidney in good condition. In the class of two dishes of American varieties, one round and one kidney, nine tubers of each, there were twenty-three exhibitors, the best tubers being those shown by Mr. George Carwell, High Street, Lewes, who had excellent dishes of Snowflake and Bresee's Prolific; Mr. Farquhar, of Fyvie Castle, was second with Snowflake and Brownell's Beauty; Mr. Pink being third, and Mr. D. Lumsden fourth with excellent tubers of Snowflake, Early Goodrich, and Vermont Beauty. In the class of best dish of any white, round Potatoes, nine tubers (prizes given by Mr. J. Harrison, Leicester), thirty dishes were shown, the best being Porter's Excelsior, from Mr. W. Porter; Mr. E. Bennet Enville, Stourbridge, being second, with Mr. Turner's new variety, The Schoolmaster, a weighty, round Potato, and one of the best in the recent trial at Chiswick; Mr. Farquhar was third with Round Lapstone. For the best dish of any coloured round Potato, nine tubers (prizes given by Mr. Richard Dean, of Ealing), the first award went to Mr. D. Lumsden, who had Carter's Main Crop, as also had Mr. Ironside, Mr. Farquhar, and Mr. Ross, who obtained the other prizes offered in the order of merit. In this class there were thirty-six competitors; many of the tubers were large and coarse. For the best dish of any white Kidney, nine tubers, Mr. Reynolds, of Beech Cottage, Horsham, was first with Devonshire Seedling, a long, yellow Kidney; Mr. M'Intosh, of Aberdeen, second, with Nonpareil, also a yellow Kidney, Mr. D. Lumsden being third with Carter's Ashtop Fluke: in this class there were thirty exhibitors, most of the dishes being above the average in quality. For the best dish of any coloured Kidney, nine tubers, there were twenty-eight exhibitors, the best tubers being sent by Mr. Bagerley, Lyerston Lodge, Newark, who had Early Vermont in good condition; Mr. Miller, of Hampstead, Newbury, was second with Late Rose, Mr. Porter, who had excellent samples of Blue Ashleaf, being placed third. For the best dish of any Ashleaf variety, nine tubers (prizes given by Messrs. George Gibbs, Down Street, Piccadilly), there were thirteen competitors, the best dish being La Belle d'Orleans from Mr. Reynolds, Mr. Farquhar being second with Sandringham Ashleaf; the tubers in this class, though small, were excellent in quality. For the best dish of any White Regent Potato, nine tubers, Mr. W. Finlay was first with Manchester Hero, Mr. Lumsden, who was second, having Rintoul's White Don: twelve dishes were shown. For the best dish of Victoria Potato, nine tubers, Mr. W. Finlay was first with Paterson's variety of Victoria, Mr. Abrahams being second with good tubers; in this class there were eighteen exhibitors.

Miscellaneous.—Messrs. Sutton & Sons exhibited samples of their new Potato, Magnum Bonum, the tubers of which are very long, and not very symmetrical, but apparently good in quality. Collections of Potatoes, each comprising upwards of 100 dishes, were contributed by Messrs. Carter & Co., Harrison & Son, and Daniels Brothers: Messrs. Carter's exhibits occupied a side stage 70 ft. in length; amongst them we noticed fine examples of Snowflake, Carter's Main Crop, Veitch's Improved Ashleaf, and Red Skin Flour-ball. Messrs. Daniels showed many dishes of Seedlings and other varieties good in quality, but somewhat small compared with the same kinds in other collections. The more remarkable kinds among Messrs. Harrisons' productions were Robinson's Challenge, Schoolmaster, and Cave's First Early. Mr. Amies showed some good produce grown by means of his patent manure. Some good stands of Dahlias were shown, and we also noticed other subjects of a character unconnected with the Potato Show.

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

HYBRIDIZATION IN RELATION TO GRAFTING.

KŒLREUTER was probably the first amongst us to raise hybrid plants, his experiments in that direction having taken place early in the eighteenth century, and Linnæus gave an impetus to the study of vegetable sexuality by the publication of his views on the subject in his "Fundamenta Botanica." Gaertner and Wichura also threw much light on the question of hybridity by their experiments made on the Continent, and in this country the late Dean Herbert stimulated horticulturists by the production of numerous beautiful hybrids, and also by the publication of his celebrated paper on "Hybridization among Vegetables" in the "Journal" of the Royal Horticultural Society, vol. ii. (1847), p. 1—81. Artificial hybridization and cross-breeding had now, in fact, become general. About this time Fuchsias and Calceolarias became greatly improved, as were also Gladioli, Rhododendrons, and Camellias; nor were ornamental plants alone the subjects of ennoblement, inasmuch as Knight had previously directed his attention to the amelioration of Apples, Pears, Plums, Peaches, Cherries, and Peas, and with great success, some of his seedlings being still popular in our gardens, notably Knight's Monarch Pear and his Marrow Peas. Among the earlier and most successful hybridizers in this country after Dean Herbert may be named Mr. James Cunningham, Messrs. Colville, Mr. Anderson-Henry, Mr. Gowen, Mr. J. Standish, and Messrs. Rollisson, to the last of whom we are indebted for forty or fifty varieties of the most beautiful seedling, or rather hybrid Heaths. About 1854 Mr. J. Dominy raised the first hybrid Orchid (Calanthe Dominiana). This has been succeeded by about fifty hybrids belonging to other genera, and it is not too much to say that the production of these hybrids has completely revolutionized the somewhat restricted views formerly held by botanists as to the generic and specific distinctions of Orchidaceous plants. At the present date hybridization and cross-breeding are everywhere largely practised, not only in European gardens, but also in those of Japan and China, where, indeed, the arts of culture and plant improvement by selection and grafting have been carried on from time immemorial. Their improved races of Primulas, Azaleas, Lilies, Diospyros, Pinks, Irids, Chrysanthemums, and Moutan Peonies, are indeed as wonderful in their way as anything produced by hybridizers in this country. New forms among plants, the result of hybridization, may be said to constitute one of the most remunerative branches of the nurseryman's business; but apart from all considerations of profit, cross-breeding deserves the most careful attention. It is a singular fact that pollen of another individual of the same species or type is generally prepotent, but in the case of Tacsonia, Passiflora, and other plants the pollen of another distinct species is more potent than the native pollen, which frequently fails to fertilize the ovules. Again, in the case of Lilies, the male parent has been observed to possess the power of fecundating the ovules of another species, and yet the seedlings have exhibited no external evidence of the influence of the pollen parent. We have now abundant evidence that a larger productiveness in the way of flowers, fruits, and fertile seeds follows judicious cross-fertilization than where no interference in that way has been instituted, and the resulting seedlings often show evidence of greater fertility and a more vigorous habit of growth than either parent, although this vigour is sometimes obtained at the expense of complete or partial sterility. It was formerly thought that all hybrid plants were infertile, but we now find that very few hybrids of the first generation are completely sterile—M. Naudin thinks not more than 25 per cent.; while the cross-bred or cultivated varieties of hybrids, as well as those of wild species, are not unfrequently more fertile than either the parent species or the primitive type. Hybrids of hermaphrodite plants may be incapable of bearing fertile seeds under any circumstances, and yet their pollen may be capable of fecundating the ovules of another species or hybrid as in the case of Nymphæa, Narcissus, and Passiflora; while on the other hand, some hybrids (as well as wild species) have impotent pollen, but are readily rendered fertile by the application of pollen from an allied species or variety. As it is possible for either the male or female organs of an hermaphrodite plant to become impotent through the disturbing influence of high culture, hybridism or cross-fertilisation, so also is it not uncommon for monœcious plants—Begonias for example—to become hermaphrodite; and diœcious plants, as Cœlebogyne, Aucuba, and Skimmia, sometimes bear anthers among the female organs of flowers on the female plants, while, as has been shown by Spruce and others, it is not unusual for diœcious Palms and other plants suddenly to produce male instead of female flowers, or *vice versa.* Apart from the true or confirmed monœcious plants there are large numbers of hermaphrodite species known to exist, which are to all intents and purposes practically monœcious, for either the pollen is shed before the stigma is receptive (as in Agave, Lobeliads, Composites, &c.), or the stigma develops itself and becomes fertilised by the pollen of older flowers (as in Calceolaria) before its attendant anthers are fully developed or part with their farina. Again, many Orchids, Yuccas, and Asclepiads, are nearly entirely dependent on insect agency for their perfect fertilization, and thus they are peculiarly liable to cross-fertilization, or even natural hybridism. The greater or less sexual affinity or consanguinity of species, is proved by the more or less perfect manner in which hybridism can be made to take place between them, as shown by the relative quantity of fertile seeds produced; but of this relationship we have no external evidence before hybridization has been effected, since species which closely resemble each other in every way cannot be made to unite, while the reverse is frequently the result where great disparity in size, habit, or colour would lead one to think otherwise. Again, two species (or even two forms of a species) in a genus (A and B) may refuse to hybridize, *i.e.*, they will not interbreed, but by crossing one of these (say B) with a third species (C), the hybrids thus obtained will not unfrequently breed with A, as has been proved in the case of some kinds of Nicotiana and Dianthus. This curious fact of species refusing to interbreed or unite sexually, except by the intervention of a third species, becomes all the more singular and interesting when we remember the partial analogy which exists when grafting is substituted for hybridizing. Thus it is a well-known fact that some varieties of Pear will not unite readily with the Quince or Hawthorn stocks, and this difficulty is surmounted by the use of intermediate stocks. Thus the Quince is grafted with the scion of a Pear, which is known to unite readily and succeed well on it as a stock, and on this is worked the variety of Pear which refuses to unite well with the Quince. Another fact of some importance connected with hybridization is, that part of the ovules in the same pod or capsule may become fecundated by the pollen of one species, and part by another; and when two species or varieties are cross-fertilized, the elective affinity—the competitive strength or fixity of character possessed by each parent—varies considerably, although, as a general rule, the influence of the male or pollen parent is prepotent; nevertheless, that this is not always the case is proved by Mr. Parkman's and other hybridizers' experience with Lilies, and by the invariable prepotence of Gesnera zebrina and Nepenthes Rafflesiana when cross-fertilized with other species of their respective genera. We find evidence that this question of prepotence between the male and female parents varies, so far as evident characters are concerned, from the almost, if not entire, overruling of those of the male to that of entire female prepotence, as in the case of the Lilies cited above. That this range of variation in hybrid plants is due to the variable strength of characteristics or fixity of habit in the parent species seems nearly conclusive, if it be not actually proved by the fact that in some few cases, notably in that of some Willows as observed by Wichura, and of Mr. Seden's Lady's Slipper, the characteristic force of the two parents is so equally balanced that the offspring of both, when crossed reciprocally, appear to be precisely alike. In this respect, also, we have observed analogous results in the case of grafted plants, and this, taken with the facts which have been observed in the

grafting of Potatoes and Cytisus, seems to indicate that the same general law governs the union of gemmules, whether the union be sexual, as in the case of hybridism and cross-breeding, or vegetative, as in the case of grafting and budding. If the same law apply to the union of the gemmules of the vegetative and sexual organs—and from the facts at present known to us, we may reasonably infer that this is the case—then grafting under certain conditions may facilitate hybridism, and *vice versâ* by drawing the characteristics of like plants into a still nearer relationship than had before existed. As hybridism is more likely to be successful when all the flowers are removed off the seed-bearing parent, except those fertilized by foreign pollen, so in grafting we find that detached scions take more readily on a young headed-back stock—especially if the relationship be not of the closest kind—than when worked on a branch or stock which is itself allowed to grow and bear flowers and fruit; and even when the scion takes well under both sets of conditions, the practical results are often very different. The late Mr. Pearson, of Chilwell, after having experimented with Grape Vines grafted on different stocks, came to the conclusion that the stock, if completely headed off, and not allowed to make any leaf growth of its own, lost all influence on the scion in about four years. It has now become highly essential to know not only whether varieties of fruits are grafted and the name of the stock used when they are described as being successful or otherwise in different soils or localities, but it should also be explicitly stated whether the stock or intermediate stock, in the case of double-grafted trees, is itself allowed to grow and bear fruit, or whether its duty is merely to support the scion grafted on it. That scions do sometimes influence the stocks on which they are worked is evident, as has been already shown; the converse of this, or effect of the stock on the scion in many instances has long been known, but there are cases in which there is no apparent evidence of either stock or scion exerting any reciprocal influence, each preserving its own character intact, although it may be dividing the functions of plant life between them. Variegation can in many cases be communicated to a green-leaved plant by budding or grafting it with variegated scions from the same or allied species. In the case of Abutilons this is a well-known fact, and soon after Messrs. Veitch introduced the vermilion-flowered, green-leaved A. Darwini, a variegated form that was artificially produced on the Continent by budding it with scions from the golden-blotched A. Thompsoni. This practice has also succeeded with the Ash, Sweet Chestnut, Laburnum, Pelargonium, Common Chestnut, Maple, Jasmine, Oleander, and Passion-flower. Black, white, and red or striped Grapes have been produced on the same bunch by splicing the branches of a black-berried and a white-berried Vine together, and analogous effects have been produced by grafting the tubers of red and white Potatoes. The oft-quoted Cytisus Adami was produced by inserting a shield bud of C. purpureus beneath the bark of C. Laburnum, and we have many records of Pears being altered in size, colour, flavour, and time of ripening, owing to their having been grafted on the Quince stock. Hence it will be seen that grafting is not to be relied on as a certain means of reproducing either varieties or species in a pure state, but, on the contrary, may in some cases be employed to change the colour or other attributes of a species or variety in a manner closely analogous to, if not identical with, hybridism and cross-fertilization. The first record that I have been able to discover of this phase of vegetative hybridism—transmission of variegation to a green-leaved stock by grafting—is in Blair's "Botanick Essays" (1720), p. 386; and two years afterwards a Mr. Fairchild observed that a green-leaved Passion-flower, which had been budded with a scion from a variety with golden-blotched leaves, became in part variegated. More recently we have had striking evidence of this blending of characteristics or graft-hybridism in Potatoes, other notable examples being those above cited. Those who wish to follow out this subject will find numerous facts recorded in Darwin's "Animals and Plants under Domestication." B.

Bouvardias as seen in Covent Garden.—Having frequently visited the flower market in Covent Garden during the past summer, I have been struck with the marvellous perfection to which the growers bring these useful plants, and I could not help noting the difference between those offered for sale and those which one generally meets with in private establishments. Private growers, as a rule, use the knife too sparingly, and therefore, instead of handsome bushy plants 1 ft. or so high and as much through, clothed with healthy foliage down to the pot, as may be frequently seen in Covent Garden, we find long spindly shoots furnished with brown foliage, bearing at the points a single truss of miserable-looking bloom. Bouvardias have been brought into the market for the past two months, and will probably continue to be so for some time yet. They are grown in 6-in. and 8-in. pots, covered with foliage and large flowers, the latter delightfully sweet-scented, and in large, well-formed trusses. For greenhouse or room decoration these plants are unsurpassed, and for cut bloom they are equally valuable. As regards management, the chief point is to cut the plants well in in spring; and as soon as they have made shoots 1 in. or so long, to shake most of the soil from the roots, re-pot into good sandy loam, using comparatively small pots; and to give plenty of water when the pots are filled with roots, mixing with it occasionally a little guano. The shoots should be stopped at every second or third joint, and should be neatly staked, and the plants should be set in an airy, light situation in a temperature of 50°; under such treatment, strong, well-flowered plants will be the result.—W. C.

Vine Mildew.—I find drought at the roots the most fertile cause of Vine mildew, although it is not improbable that sour damp soils will produce similar results. Mildew is one of those parasitic fungi that are ever on the alert to secure a foothold on plants, and only need suitable conditions to find it. Plants in vigorous health, with roots well supplied with nutriment, can repel its attacks; but those growing under defective cultivation, or especially where root-moisture is deficient, are soon attacked and speedily succumb. The Vine is a robust feeder, and during its period of growth needs plenty of moisture, and if this be wanting, the check given to its health and vigour is just the sort of chance the mildew seeks in order to enable it to establish itself, when it soon becomes incurable. Some Vines that last year, under the influence of heavy July rains, produced a good clean crop of Grapes, are this year literally smothered with mildew—doubtless the result of the great drought to which they have been subjected, and the consequent dryness of the borders. Plenty of air has been given, and no stagnation of any kind has been permitted in the house. Naturally the Vines are vigorous and healthy, but they have suffered from drought, no water having been applied. Next year the borders will be kept well mulched with manure, and in dry weather occasional waterings will be given. After the winter-pruning the plants will also be dressed with Gishurst Compound, and in this way it is hoped the mildew will be counteracted.—D.

Grafting Ficus elastica.—The common India-rubber Plant is now so largely grown for market purposes, that any new plan of propagating it is of interest. Mr. Westland, Witley Court, recommends grafting it on the thick roots of any variety of the common Fig that may be at hand. Grafting, he says in the "Florist," may be performed at any time when grafts are procurable during the winter and spring months. So quickly and certainly is a union effected, that the mode of grafting signifies but little, so long as the root and scion are fitted to each other, and slightly bandaged. No mastic is required. Any portion of the Ficus with a couple of buds will grow, but when a moderate supply only is required, a sufficiency of scions with terminal buds is easily procurable, by the introduction of a few old stools into a brisk humid temperature. After grafting, plant them singly in small pots in a light soil, merely covering the stock, and plunge in a brisk bottom-heat, excluding air for a few days by a covering of glass. They will quickly become established, and afterwards will require attention in potting so as to facilitate active growth. The time saved and the vigour produced by grafting are important to those who grow largely for the market. Roots suitable for this purpose, if buried in soil in a cool, retarding medium, will keep fresh for long time.

Irrigation in the Garden.—The experience of the past July will compel the cultivators near the Atlantic coast to consider the subject of irrigation more seriously than ever. There is rarely a season when the crops would not be benefited by a copious watering, and in such a season as we have just passed through it is with many vegetables a question of watering or no crops at all. We have no doubt whatever that the Strawberry crop would in ordinary seasons, by its increase, pay a handsome interest on the outlay for irrigating apparatus, and in unusually dry seasons the saving of the fruit would recuperate all the expense by a single crop. By irrigating we do not refer to mere watering as it is generally understood in gardening, but flooding the surface with water and allowing it to soak in to such extent that the soil will be thoroughly moistened. This requires an

abundant store of water, but not so much as many suppose, as the garden may be so arranged as to be irrigated in detachments. The most favourable conditions are where the water of a brook can be led along the higher part of a garden and conducted to all parts. Unfortunately it is only in the rarest cases that this can be carried out, and most gardens must depend upon water obtained from other sources, and stored until wanted. It is not our present purpose to discuss the details of irrigation, but simply to insist that it is practicable in nearly every garden, and that the means of effecting it will depend upon circumstances which will vary with the locality. Water-rams and windmills of various kinds are now made in great variety and at low cost, and water can be raised cheaply. Other sources not being at hand a well will afford a supply. If the lay of the land permit the building of a cistern reservoir, this will be found generally to be the best mode, but wooden tanks can be made to store enough to irrigate a moderate surface. It appears to us that there is no matter connected with gardening in which there is so much room for improvement as in that of irrigation, and the present, when the sad ruin wrought by the drought is only too visible, is the most appropriate time to consider "ways and means."—"American Agriculturist."

Caoutchouc Trees in India.—At a meeting of the Society of Arts, Mr. Markham read a paper on the Caoutchouc-yielding plants of the tropics in relation to their introduction into British India. The best is the thickened gum of Siphonia elastica; Mexican rubber is the produce of a species of Castilloa. The Castilloas belong to the family of Artocarpaceæ, of which the Breadfruit and Jack tree, and the Angelli of India are members. It is worthy of note that the Artocarpaceæ are closely allied with the Moraceæ, the Fig tribe, to which the Caoutchouc trees of India belong. The Heveas and Castilloas are the India-rubber trees of the New World. In India Ficus elastica, which is found in the forests which border the valley of the Brahmapootra, in the province of Assam, furnishes good Caoutchouc. The family of Apocynaceæ includes the other Caoutchouc-yielding trees of Asia and the eastern islands; the Chavannesia, of British Burmah; the Urceola, of Borneo; and the Vahea, of Madagascar; as well as the Landolphias, which produce the Caoutchouc of Africa.

M. Dumas' Remedy for Phylloxera.—Dr. Andrews, in his recent address to the British Association, mentioned that M. Dumas had discovered that the sulpho-carbonate of potassium, in dilute solution, fulfils every condition required from an insecticide, destroying the insect without injury to the plant. Will you kindly solicit inquiry relative to strength and mode of application?—A. Clapham. [M. Dumas does not give the exact proportions of sulpho-carbonate of potassium and water to be used for destroying the Phylloxera, but only the specific gravity of the solution, viz., 1·357. It is applied by boring half-a-dozen holes, 2 ft. or 3 ft. deep round the Vine, and pouring the liquid into them, adding more as the solution is absorbed. For further details see an article on the subject, by Mr. C. W. Quin, in Vol. IX. of The Garden, p. 484]

Poisoning by Honeysuckle Berries.—Dr. Bradburn, of Bridlington, gives the following account of a case of poisoning by these in "The Lancet":—"A week or two since I was called in to see a little boy, aged about three years, who was said to be very sick and ill, but no further information could be gathered until I saw the patient; he then presented as nearly as possible the following symptoms:—Dryness of lips, with difficulty of deglutition; thirst; numbness throughout the body; cold extremities; heart's action much accelerated and weak; decided delirium; and pupils dilated. He was, in fact, in a state of collapse, and the symptoms were sufficiently alarming. I naturally at once suspected Belladonna poisoning or some other allied genus of the order Atropaceæ, and made inquiries as to whether the child had been eating anything of a suspicious character. I then learnt that he had been indulging in some berries during the afternoon, and from the nature of the place where it was said he had procured them I expected he had been gathering the fruit of Stramonium, which would have accounted for all the symptoms. My surprise was very great, however, on being shown a specimen of the plant which had done the mischief, and which turned out to be one of the Loniceræ (not the common Honeysuckle), a genus belonging to the order Caprifoliaceæ. It is well known that these plants have emetic and purgative properties, but I was assuredly not aware that they were capable of producing an action apparently (in the instance in question at least) so closely allied to Belladonna and its group; and these having such a decided action of their own, I look upon the circumstance as not a little remarkable. The little fellow made a perfect recovered, after sinapisms had been constantly applied to the calves of both legs and nape of neck, along with a stimulating treatment. It should have been mentioned that there was much vomiting with ejection of the fruit, to which circumstance I chiefly attribute the recovery."

NOTES OF THE WEEK.

The Bog Bean as a Border Plant.—Referring to the article on the Cape Pondweed in The Garden of last week, a correspondent states that he has grown several handsome water plants as border flowers, particularly the Bog Bean. The greenhouse Calla, usually treated as an aquatic when grown out-of-doors in this country, would, he considers, probably do best with us on warm borders; it thrives as a border flower in the south of France.

Autumn-sown Annuals.—Concerning these "Salmonicepe" writes to us as follows:—"I have just measured a plant to-day (October 4) of Nemophila insignis, sown more than a year ago in August, 1875. It has been in flower since May, and measures now 4 ft. by 3 ft. 10 in. It would take a long time to count the blossoms, although they are not so large as the earlier ones. The plant grows in a new and rich border; according to the ordinary way of sowing annuals this single plant occupies the space which is usually allotted to a whole packet of seed. Of course a moist climate favours the growth of most annuals."

Tuberoses Out-of-doors.—At the Hale Farm Nurseries, Tottenham, Tuberoses are flowering freely in the open border. They are vigorous and healthy, and the flower-spikes, which are numerous, are thickly studded with buds and blossoms. The plants are growing in a light, sandy, well-drained soil, in which the bulbs remain all winter, slightly protected during severe weather by means of ashes or other dry material. It will thus be seen that hothouses—the places in which Tuberoses are generally grown—are not absolutely necessary for their successful culture.

Brazilian Flowers.—Travellers in Brazil speak of Fuchsias 50 ft. and 60 ft. in height, blooming from top to bottom; of large bushes of Abutilon venosum, bearing a profusion of orange bells streaked with crimson; of huge Daturas, with hundreds of white trumpet-shaped and sweet-scented blossoms, some 16 in. in length; of Orchids and Ferns; huge Arums with shield-like leaves, large enough to cover a man; brilliant red and yellow Bromelias and Tillandsias; epiphytes and parasites of all descriptions; Camellias large enough to climb into to pluck the topmost blossoms; and Poinsettias—not little plants such as often ornament our London dinner-tables, but grown into very large bushes—on which the crimson star-like floral bracts measured 2 ft. in diameter.

The African Lily Out-of-Doors.—Referring to Mr. Greenfield's note on Agapanthus umbellatus in The Garden (see p. 328), a correspondent writes to us from Pembrokeshire:—"My large tufts of this plant, full of flower as usual this year, have been out-of-doors in the same border for 19 years. I never saw them as good in pots."

Great North of England Horticultural Exhibition.—We have received the prospectus of an International Horticultural Exhibition which it is in contemplation to hold in Carlisle in 1877, from which we extract the following:—"The central position of that border city and its remarkable railway facilities are so well known that the proposal will not only be encouraged by the leading local horticulturists, but will also be largely supported by the principal London and other metropolitan exhibitors, as well as by those on the Continent." A provisional committee, of which Mr. Baxter Smith is the chairman, has been formed to carry out the scheme to which we wish the greatest success. Such an exhibition cannot fail to be well supported.

Government Distribution of Plants.—The Commissioners of Public Works intend to distribute this autumn among the working classes and the poor inhabitants of London the surplus bedding plants in Battersea, Hyde, Regent's, and Victoria Parks; in the Royal Gardens, Kew, and the pleasure gardens, Hampton Court. The clergy, school committees, &c., by applying to the superintendents of the various parks, will receive early intimation of the number of plants that can be allotted to each applicant, and of the time and manner of their distribution.

The Colorado Potato Beetle.—Mr. Andrew Murray writes as follows to the "Times":—It may be worth while to acquaint the public that one at least of the reported recent instances of the arrival of this beetle in Europe proves to be erroneous. The specimen that was found in Germany was forwarded for identification to Paris, whence I have just returned, and I learnt from M. Chevrolat, one of the entomological experts to whom it was submitted, that it was not the true Doryphora decemlineata, but an allied species very much resembling it (Doryphora juncta), which inhabits the Confederate States, and does not meddle with the Potato. Specimens and illustrations of both may be seen in the Bethnal Green collection. The consolation is small, for if the one can get across the Atlantic alive, so may the other, and as the numbers of the Potato species are infinitely the greater, so must the chances of its coming be multiplied. However, "let us still be just." In this instance it has not come.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Now, when the bright colours of summer bedding plants are at an end for this season, and when the beauties of leaf gardening have become dim, it is some satisfaction to know that there are still many border plants that will maintain a large amount of gaiety for many weeks yet to come. Plants of the double and single white Colchicums are forcing their beautiful flower-buds through the hard earth, and many have already expanded into large, perfect blooms of snowy whiteness. Autumn Crocuses, too, are still lovely, especially C. speciosus and C. serotinus. At Ware's Tritoma Macowani is also flowering finely; this grows freely in an open situation, and in a deep, well-drained, sandy soil, and it will doubtless become one of the most valuable of autumn-flowering plants. Fine blooms of Tigrida speciosa may still be found, and the Mountain Evening Primrose (Œnothera montana), and O. macrocarpa, likewise continue to produce flowers in abundance. Oxalis rosea and alba in the form of an edging are just now in great beauty, and they are also plants well adapted for rockwork. Commelina cœlestis occupies the first place amongst blue-flowering plants, a class which also embraces Veronica corymbosa, the blossoms of which are very handsome. The single Mexican Dahlias are just now strikingly beautiful, and make a grand display, the best varieties being D. variabilis and D. coccinea; the flowers of the latter are of the richest scarlet and crimson, with golden anthers. Beds of Anemone japonica alba are still sheets of snowy blossoms, and Pyrethrum uliginosum is at present one of the best of white Daisy-flowered plants, and promises to last long in bloom. The Japanese Monkshood (Aconitum japonicum) is now in fine condition at the Hale Farm Nurseries, producing fine spikes of deep blue, helmet-shaped flowers. Gypsophila prostrata and Convolvulus mauritanicus rank at present amongst the most desirable of rock plants, the latter being densely covered with thin, pale blue blossoms. Tropæolum speciosum is also very effective trained on stumps of trees, on walls, or on fences. Marvel of Peru, which has this season been unusually showy, is still in great beauty, as is also the old Salvia patens, which is now well furnished with large spikes of rich blue flowers. At this season of the year few plants are more beautiful than the Showy Stonecrop (Sedum spectabile), which is literally covered with large spreading heads of purplish-carmine flowers. A dwarf species named S. purpureum is also a valuable edging plant, producing countless heads of bright purple flowers. The blue and white varieties of Campanula persicifolia are still in good condition, as are also Lythrum alatum and Veronica virginica. The small double flowers of Emilia sagittata are also very effective just now, as are likewise tufts of the pretty dwarf Erigeron mucronatum, its small, Daisy-like pink and white flowers contrasting well with its stiff, green foliage. To these may be added Tritoma Uvaria, the grand, stalwart, flame-coloured flower-spikes of which have in some cases shot up to a great height from amongst its graceful and still bright green foliage. In scarcely less beautiful condition, too, is its near ally T. Burchelli, which is flowering freely at Kew, where Michaelmas Daisies are likewise now making a grand display. Among the latter the most effective varieties are Aster longifolius, A. simplex, A. lanceolatus, A. ericoides, and A. lævis, the latter being one of the best of the dwarf, shrubby-habited kinds that bear multitudes of well-formed rich purple flowers with golden anthers. The Aster-like flowers of Galatella hyssopifolia are also strikingly pretty, more especially those of G. cana and G. dracunculoides, both remarkably floriferous, bluish-purple-blossomed plants. The tall-growing Aplopappus ciliata and the Golden Rods, Solidago neglecta, S. serotina, S. rigida, and S. latifolia are still fresh and showy, and make valuable ornaments for shrubberies and wild gardens. Coreopsis Drummondi now ranks amongst the best of yellow-blossomed Composites, its dwarf habit and bright golden flowers rendering it especially desirable for beds or borders. Plumbago Larpentæ may be still numbered amongst the best of autumn-flowering plants, its green, reddish-ribbed foliage and bright blue flowers being very attractive at this season, when blue-flowered plants are by no means abundant. The foliage and flowers of many varieties of Pentstemons are also still fresh and beautiful, especially those of P. campanulatus roseus, and P. pulchellus, and the dry hard flowers of Helichrysum brachyrhynchum, H. album, and H. luteum are likewise very attractive. Several varieties of the Eupatoriums are now very showy; also the small, delicate, rosy-pink flowers of Silene armeria. We likewise noticed at Kew several large spikes of the Eucomis undulata, thickly set with pale-coloured Orchid-like blossoms. In addition to these the following are now in good condition, viz., Rudbeckia speciosa, R. Newmani, Chrysopsis pilosa, Bidens Warscewicziana rugosa, Salvia, Grahami, and Scilla autumnalis.

Cone-bearing Specimens of Cedrus Deodara.—A Cedrus Deodara, planted here in 1841, from seed sent by the late Dr. Wallich when curator of the Botanic Garden at Calcutta, has produced male catkins in abundance this year and in each of the four previous seasons, the number of catkins increasing each year. The tree is the best sheltered and most vigorous specimen of many similarly raised, and is now nearly 35 ft. high—a well-balanced and handsome tree. I fear our climate is not warm enough to allow it to develop the cone, and I shall deem it a favour if any of your readers can encourage me, by their larger experience, to expect this desirable result. The tree has coned in Devonshire, and I am aware of many instances of the male catkins being produced in the West of England in favourable seasons.—J. J. R., *Penrose, Cornwall.* [A Deodar at Charleville, County Wicklow, is reported "to be now showing a profusion of young cones."]

New Crimson-rayed Lily.—Under this designation you give (see p. 327) a description of a Lily in every way corresponding with the true Lilium rubro-vittatum, a variety of L. auratum, and introduced to commerce by Dr. Wallace in 1868. It is called by the Japanese Ben-e-suge, or King of the Lilies, and so rare is it even in Japan that we are only able to procure a few bulbs of it each season, and these at very high prices. A form of Lilium auratum with a slight tinge of crimson or scarlet, and in some cases extending to the centre of each petal, is what is usually sold under the name of rubro-vittatum, but, as we have just stated, the true Lilium rubro-vittatum answers exactly to the description given of it last week in your columns, and we think you have also given the description of the true L. rubro-vittatum in a former number (see Vol. VII., p. 52.) Our painting of the first bulb which flowered at Colchester is in the hands of Mr. Barr, and we have asked him to show it to you as a confirmation of our statement. We do not see that there is any occasion to add the name of cruentum to a form already known and described.—The New Plant and Bulb Company, *Colchester.* [The Lily described by us (see p. 327) has flowers much larger than those represented in your drawing, and of a much darker colour, the base of the rich crimson stripe or ray being nearly black, whereas in your drawing it is yellow.]

Strawberries as field crops in Scotland.—This has become an important industry in some parts of Scotland. Aberdeen and its surrounding districts have for years been famous for Strawberry production. This year, however, the crop has not been quite so good there as it sometimes is, neither in quantity nor quality. Strawberries have, however, been a good crop in some parts of Perthshire and Forfarshire, and have paid the growers handsomely. They are not an expensive crop. The cost of planting an acre does not exceed £20, and the plants will remain good for several years. Only last week we ("North British Agriculturist") heard of a grower near Coupar-Angus netting £400 this season from three acres of thin land under Strawberries. The plants on which these grew were four years old. Another near Perth refused £2800 for the crop of 28 acres of Strawberries, and the offerer was to have gathered the crop, which was a splendid one. If anything like £100 can be got for the produce of one acre, we doubt not many will put considerable portions of their sharp, thin land under this crop. There is no other way in which it can pay so well.

Gymnothrix japonica as a Conservatory Plant.—This noble Japanese Grass has lately become popular as a sub-tropical plant and justly so, but its full beauty is only attained when it is planted out in a sunny conservatory where it reaches a height of 10 or 15 ft. Next to the Bamboos this must be ranked as one of the handsomest of all plants in the Order to which it belongs. It may be well to add that the graceful jointed habit which it possesses is not assumed until the second year from seed.—F. W. B.

Lobelia fulgens as a Bedding Plant.—We find the red-leaved variety of Lobelia fulgens to be the best autumn bedding plant which we have. Its reddish-brown leaves look well in summer, and it is now a mass of brilliant scarlet and brown, a condition in which it will probably remain to the end of October, or even later should the weather be favourable.—C. M. Owen, *Goery, Ireland.*

Rosy-flowered Michaelmas Daisy (Aster Novæ Angliæ roseus).

Yellow Corydalis (C. lutea).

Showy Everlasting (Helichrysum brachyrhynchum).

Scarlet-flowered Ipomopsis (I. elegans).

Glowing Lobelia (L. fulgens).

Trailing Boussingaultia (B. baselloides).

Rosy Yarrow (Achillea Millefolium rosea).

Silvery-leaved Sunflower (Helianthus argyrophyllus).

Italian Alkanet (Anchusa italica).

American Senna (Cassia marylandica).

Dwarf Marigold (Tagetes tenuifolia).

Tall Vernonia (V. prælta).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

PLANTING HERBACEOUS BORDERS AND BEDS.

Now that herbaceous plants are coming into favour it is very desirable that planters should select such subjects as are really useful and attractive; for, whatever may be said to the contrary, the majority of the people like to see their flower borders gay; and no great foresight is needed to predict that, unless this fact is kept in view, herbaceous plants will again fall into disrepute. No one, however, need be dissatisfied with a herbaceous border if judiciously planted. The most objectionable feature about such a border is its somewhat untidy aspect, in consequence of the different species fading or dying down in succession after they have finished their growth. Certainly this should not be a fault with any reasonable person; but, after being accustomed to trim flower-beds, the prejudice against fading Crocuses and other bulbs, and the flowerless stems of Delphiniums, Phloxes, and similar plants has to be overcome. It does not seem to be generally understood that our commonest border flowers must have a season of rest, and that time must be allowed if they are expected to grow and flower well. Untidiness, however, from this cause need never be very offensive. A worse fault is to plant species that are neither beautiful nor interesting. Whether beds or borders have to be furnished the arrangement must be the same, that is, the tallest species should occupy the background, and all should be so distributed that the successional display of flowers will be constant and regular throughout. Let us assume that we have a border 12 ft. or 14 ft. wide, and of any length, to plant in the autumn or spring, and that it has been previously trenched or deeply dug, liberally manured, and otherwise made ready for the plants. First rows should be marked off from 18 in. to 2 ft. asunder. Planting in formal lines is objectionable to some people, but as the stools increase in size the formality disappears, and besides, methodical planting cannot be done in any other manner. The back rows should of course be planted first, but before beginning the planter should take stock, and see how many plants of each he has got for each row. This settled he can proceed with confidence if he have provided sufficient stock to fill his ground by dividing, subdividing, and propagating previously. Supposing he has twenty species for the back row, and that 2 ft. are allowed between the plants, he must begin by planting one species at a time, setting the plants 40 ft. apart until he has gone the length of the border; then beginning with the next species, each plant will come in just 2 ft. beyond those which were planted first, and so on until the whole twenty kinds are planted and the row is filled up. The other rows will of course be planted in the same way, and the distance between the individual plants of each kind will depend upon the number of the latter included in the rows. In this way different colours can be arranged as desired, the border furnished uniformly throughout, and quite a striking effect can be produced if the planter will only content himself with a moderate number of species, so that his reds, whites, and blues, and intermediate shades are not too far apart. This, it may be thought, is a kind of compromise between the old herbaceous border and formal style of planting—and so it is; but it is the only way to make such a border pleasing and attractive to the generality of people. In the spring borders will be gay with Narcissi of different kinds, Primroses, Auriculas, Candytufts, dwarf Phloxes, Violas, Daisies, and Crocuses, all of which will afford bright and conspicuous contrasts. These will be followed by Azaleas, Spiræas, Irises, Delphiniums, Potentillas, Carnations, Lilies, Stocks, Asters, Sweet Williams, &c.; to be succeeded in turn by later Phloxes, the beautiful pink and white forms of Anemone japonica, Michaelmas Daisies, Mignonette, Lychnis, yellow and blue Violas, Veronicas, Tritonias, and other plants, relieved here and there by Roses, Lavender bushes, annuals, and such bedding-plants as can perhaps be spared when the bedding-out is finished. Such a border is most attractive during the months of May and June, perhaps, while the foliage of all the species is fresh and green, and while the spring flowers are at their best. To produce a particularly rich and pleasing effect, it is, however, necessary to plant, especially in the front rows, a good quantity of the Golden Feverfew, Arabis albida, perennial Candytufts, Lithospermum prostratum, Phlox procumbens, Violas, Narcissi, Crocuses, Tulips, different sorts of Primroses, Auriculas, and patches of Daisies. For later work plant Anemones, Phloxes (of the most distinct colours only), plenty of Lilium candidum at intervals, Potentillas, Stocks and Asters, Tritomas and Gladioli. Between the rows may be sown in June, for late display, good patches of Eschscholtzia californica, Nemophila insignis, Virginian Stock, and white and purple Candytufts. Plants of botanical or other interest may be planted as desired, but the great bulk of the plants should be selected from the brightest and gayest species that can be found, and such subjects should be planted first. Borders or beds so furnished cannot fail to give satisfaction if the plants receive some attention in the way of staking, and a little stirring amongst them with the hoe to kill weeds. October and November is a good time to plant most hardy bulbs and herbaceous plants, and what cannot be planted then should be left till spring, except bulbs, which may be put in any time during the winter or early spring when the soil is in a fit state. Nearly all herbaceous plants grow and increase fast in ordinarily good soil, and it is not therefore necessary to plant large pieces at first, unless the stock is abundant. Small pieces with a good root or two to them are sufficient, and will extend a great deal in a single season. All digging and manuring should be done in November, after the decaying stems and leaves have been removed. If the work be delayed till mid-winter there is danger of injuring any bulbs which may be coming up. A steel fork should be used on all occasions, but after digging and dressing are finished nothing but a Dutch hoe should touch the ground. Herbaceous plants generally thrive best in a rather light, rich soil; consequently the best manures are leaf-mould and sand for heavy soils, and decayed hot-bed or well-rotted stable-yard manure and refuse composts from the potting-bench when the soil is rather poor. S. W.

BOURBON FAN PALM IN SUB-TROPICAL GARDENS.

Latania borbonica, though one of the most common of all Palms, not only stands in the front rank amongst indoor decorative plants, but is now used extensively during summer in sub-tropical gardens; and few of the numerous fine-foliaged plants now used in that department combine a bold, tropical aspect with a graceful and elegant drooping habit to the same extent as this Palm. It is also one of those plants that accommodate themselves to a great variety of soils, and to a wide range of temperature; it is, therefore, eminently suited to the requirements of cultivators who have but a limited amount of heated structures at command. Under good treatment Latanias grow rapidly, and if purchased in quite a small state they may be shifted for the first year into a 6-in. pot, using a good sound compost of loam, rotten manure, and coarse sand. In turfy loam one-year-stacked, plants of Latania answer well, both for table and vase decoration. When they begin to show that they want better soil, we give a good large shift, using the same compost as before, and, if placed in a brisk, moist heat, they quickly develop a splendid head of foliage, and under ordinary care they may be kept in health for years in pots measuring from 10 in. to 12 in. in diameter. An intermediate temperature, or one that does not sink much below 50°, will suit this Palm admirably, and if required for general decorative purposes the plants should be gradually inured to the lowest temperature which they will endure. There is one advantage in growing plants of this class for decoration, and that is, owing to their graceful habit of growth they set sticks and ties at defiance, and therefore groups, consisting of such subjects, can never be so stiff and formal as when they are composed of trained plants. As a central object, this Palm will be found to associate well with coloured Dracænas and similar plants either in or out-of-doors.

Henham. James Groom.

DUKE OF WELLINGTON CARNATION.

All who have the smallest patch of a flower border like, if possible, to grow a few Carnations, and in many large gardens they are planted yearly by the hundred and thousand for the supply of cut flowers as well as for border decoration. Many of the very finest varieties do not succeed under the rough-and-ready treatment to which they are often subjected, and under which some varieties, including the Clove, succeed tolerably well. To grow the finer varieties with more delicate constitutions, special treatment is needed, and as a rule they require to be grown by themselves in beds specially prepared for them. Among the freest, and certainly by far the showiest that has

ever come under our notice is the scarlet Bizarre called Duke of Wellington. It has a vigorous constitution, a dwarf branching habit, and blooms freely in succession from July till the end of September. Its colour is most effective, and beds of it—taking one day with another throughout the season—are not surpassed for a solid mass of brilliant colour by the scarlet Pelargonium itself. The flowers are medium-sized, produced in great clusters, and the sheath holds together to the last without bursting, rendering it a most valuable variety for vase decoration, bouquets, and button-holes. Some soils are much more suitable for Carnation culture than others. A good, deep, rather heavy loam, enriched with old cow manure, may be considered the best. In such a soil it is astonishing how Carnations keep in health and bloom for years in succession in mixed borders without ever being layered or removed. On sandy or gravelly soils the very reverse of this is the case, and it often requires much care to get Carnations to succeed even ordinarily well. In this case it is useless expecting to see old stools continue for years as in more suitable soils. The best course under all circumstances is to layer and plant young plants every year; and this becomes a necessity in unfavourable soils. Light hungry soils can be made more suitable for Carnations by spreading a layer of clay over its surface in autumn, and, after the weather has broken it up, treading it in, and spreading another layer of heavy soil on the new surface, to be in its turn dug in with thoroughly decayed cow manure. This, with a mulching of rotten manure after the layers are planted in spring, will, with watering in dry weather, yield very fair Carnations. Prince of Wales, another scarlet Bizarre, is a very good and free grower, and so are the Crimson, Rose, and White Clove Carnations; but none of them have the fine habit and wonderful profusion of bloom of the Duke of Wellington.—"The Gardener."

Autumn Crocuses.—The beautiful autumn-flowering Crocus (C. nudiflorus) forms at present quite a gay feature in the York Nurseries, the beds in which it grows being nearly solid with bulbs, the flowers of which are large, bright purple in colour, and borne well up above the ground. This Crocus likes a rich, sandy soil, and is, I believe, the earliest of the autumn kinds, those which follow being C. speciosus, a lovely, free-flowering variety; a little later in the season this is succeeded by C. autumnalis and C. sativus, and still later come the bright and charming little orange-yellow flowers of C. Aucheri simultaneously with those of C. Sieberi, which has purple flowers. The two latter species often continue flowering onwards through the greater part of the winter months when the weather is open and mild.—R. P.

Violets and their Times of Blooming.—That very fine Violet Victoria Regina is now blooming freely with me, and promises to do so as long as the weather remains open. It is decidedly the best of all the single sorts; it is as much in advance of the Czar as that variety is ahead of Devoniensis, whilst it is inferior to none in colour or perfume. Each flower is about as large as that of the common single Russian, and it is not less floriferous. Grown in a sunny, exposed situation, it does not run too much to leaf; and if the soil be good, it produces a mass of strong crowns that are full of buds. Having just lifted a number of strong plants of this Violet to bloom under glass during the winter, I have taken off all the side-shoots and dibbled them thickly into a bed. These will root well during the winter, and, if planted out afresh with more room in the spring, will grow into large, robust plants for the succeeding autumn. Violets of all kinds are now blooming more or less, a circumstance doubtless owing to the great heat of the past summer having forced the plants on with more than usual rapidity. The autumn rains, too, by cooling and moistening the soil, have no doubt imparted to it some of the characteristics of spring. Both the double blue and white, double red, and the Neapolitan are blooming in the open ground more or less, and the Russian market Violet is being gathered for sale in large quantities. This would seem to show that a hot summer is specially well suited to Violets.—D.

Clethra-like Loosestrife (Lysimachia clethroides).—The list of good herbaceous perennials is already a long one, yet we are always pleased when we can add to it a new plant of real merit, and it was very gratifying to recognise, in a garden which we lately visited, a clump of Lysimachia clethroides, a new Loosestrife from Japan. The Loosestrifes are best known through the common Money-wort (L. Nummularia), a plant much used in hanging baskets; but this is very much unlike most of the species in habit, as it has prostrate creeping stems, and solitary flowers from the axils of the leaves. This new species has a strong stem, 2 ft. or more high, and dense terminal spikes of pure white flowers, which curve gracefully at the apex. The resemblance between the flower-spikes of this and those of the beautiful Sweet Pepperidge, or Clethra of American swamps, suggested the specific name clethroides, Clethra-like, for the plant. We ("American Agriculturist") are informed that this has one quality unusual in a herbaceous plant, *i.e.*, the leaves take on autumnal colours and show fine tints of red and yellow, much after the manner of those of the Sugar Maple. Apparently this Loosestrife is little known in British gardens, and the few persons who have it here do not know how or when it was introduced; but it is not unlikely that the seed was accidentally brought along with that of other Japanese plants.

Eryngium pandanifolium and E. platyphyllum.—It may interest some of your readers to know that these Sea Hollies withstood the winter out-of-doors here last year without any protection whatever, and are now in full flower, their stately panicles of blossom having attained a height of fully 9 ft. Of the two, the first is decidedly the more ornamental, owing not only to the more widely branching character of its inflorescence, but to its long, gracefully-recurved, radical leaves (with us at least 3 ft. long) gradually diminishing in length as they occur upward on the stem. Devoid of any brilliancy of colour, it is impossible to imagine a more elegant plant than this is, combining, as it does, in about equal proportions, both symmetry and grace. The broad-leaved Eryngium has its foliage spread in a wide, expanding rosette on the surface of the ground, from the centre of which rises a stem fully 3 in. in diameter at the base to a height of nearly 10 ft.; the cauline leaves are short, blunt-pointed, and adpressed to the stem, which, added to the short stalks on which the secondary flower-heads are supported, give a rigid character to the entire plant. The rapidity of growth in both plants is really wonderful, more especially in the latter, as will be inferred when I state that in the short space of four weeks the flower-stem had shot up to a height of 8 ft. 3 in., full of robust vigour. I am in hopes, if we only get dry weather, that the seeds will ripen. —Jas. C. Niven, *Botanic Garden, Hull.*

A Natural Rock Garden.—I saw last week one of the finest natural rock gardens in England, and from it I have gained hints which I think will be useful. I went up Ingleborough, in Yorkshire, ascending from the south-eastern side and descending by the north-western. Of this descent the first part was through rough, loose stones, probably rich in plants, but it was too late in the year and much too cold to botanize much. The next stage was a thick zone of Heather, ending in a long, flat, limestone plateau; this plateau consists of rock standing about 1 ft. above the turf, all perfectly level, and scored in every direction by deep and very narrow fissures. Scarcely a sign of vegetation is seen above the level of this rock, but every fissure is full of plants of different kinds. Many of these must have been one or two years below the surface, but they evidently rejoiced in their snug quarters; they were completely sheltered both from wind and sun, were quite moist, and yet were perfectly drained in the limestone fissures. I did not measure any of the fissures, but I should say that few were over 18 in. in width, and the majority of them much less. I feel very sure that if we adopted this plan of protecting our Alpine plants on all sides, we might be more successful as regards their culture than most of us now are; at any rate, after seeing this natural rock garden of Ingleborough, I think the plan well worth a trial.—Henry N. Ellacombe, *Bitton.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Fuchsia Dominiana in the Open Air.—Some vigorous plants of this beautiful hybrid, raised between F. spectabilis and F. serratifolia, may now be seen at Chiswick forming bushes some 2 ft. in diameter, each growth being ornamented by terminal clusters of buds and flowers. Out-door bush culture is therefore well worth adopting by those who have not room to grow this Fuchsia as a permanent conservatory pillar or rafter plant.—F. W. B.

Iris ruthenica.—There is a slight error in the statement (see p. 328) regarding April and May being the normal time at which this plant flowers. I believe it flowers in nearly every month in the year—mostly so late in autumn—but owing to the blooms being completely hidden by the foliage few people are aware of its being in flower at all. I consider it a gem amongst Irises, and the best place for it is a flat basin-like nook high up on rock-work where the flowers could be seen and examined.—Thos. Williams, *Ormskirk.*

Early-flowering Chrysanthemums.—These, though inferior in size of bloom and variety to the later-flowering kinds, are, nevertheless, well worth attention where a succession of bloom is desired. Several large beds planted with them in Parker's Nursery have been in great beauty for many weeks past, and will in all probability continue in that condition for a long time to come. The plants do not grow more than 2 ft. high, are of a free, branching habit, and produce blooms in great abundance. The principal varieties are Madame Picœul, Precocite, indicum nanum, and Frederick Pill.—S.

Pansies in Autumn.—Late-rooted cuttings of Pansies are now very beautiful in warm, sheltered positions. Mr. Hooper, of Widcombe Hill, Bath, has sent us blooms of the following from among others now in excellent condition: —Golden Queen of England, Enterprize, King of Bedders, Black Jupiter, Rookburgh, Mrs. Bull, Black Prince, Black Sam, Beauty of Bath, King of the Blues, Captain Hayter, King Koffee, Clara Jane, Robert Parker, True Blue, and The Dove.

EDIBLE AND POISONOUS FUNGI.

With autumn comes the great mass of Mushrooms and Toadstools—good, bad, and indifferent, and of all colours, shapes, and sizes. For some considerable time past, attempts have been made to introduce and popularize Continental Fungus-eating customs; but, up to the present, these attempts have not been crowned with any special degree of success. We learn from Dr. Badham, that in Rome the common Mushroom is classed with poisonous Fungi, and not allowed to be sold in the public market. It is highly improbable this would have been the case without some good and substantial reason for it, for Italy is a country where numerous species of Fungi are largely consumed, and no fear of these plants as a class exists. It would seem as if there were something special in the climate of the districts from which the Roman market is supplied that renders the Mushrooms grown in it poisonous. We know how powerful is the influence of surrounding circumstances upon flowering plants. For example, the exclusion of light from Potato tubers or Celery plants considerably modifies their properties. Every now and then we hear of people being poisoned (not necessarily fatally) in this country by eating Mushrooms, and when this happens, it is almost always attributed to the wrong kind having been gathered, and not to the nature of the plant being modified by special circumstances. Upon more than one occasion such cases have come under my notice personally, in which people, who knew what was a Mushroom and what was not, have been made seriously ill by their repast. What the precise difference in the composition of the plant is which causes the unpleasant effects, is at present unknown, and is one of those points which have to be worked out. As a rule, however, the wholesomeness of the Mushroom is well-nigh cosmopolitan. Several years ago the late Mr. Thomas Baines, who had travelled much in Australia and Africa, told me Mushrooms were always eaten when found in his expeditions. Popular credence points to the unwholesomeness of those specimens grown under trees or in woods, but this is in no way substantiated by my experience. The possibility of distinguishing an edible from a poisonous Fungus by bruising with a piece of gold or silver, has been repeated time after time in all kinds of books, and many an excellent Mushroom has been rejected by the credulous housewife because, when rubbed with salt and a silver spoon, it has turned yellow! The vast majority of Mushrooms grown in my district, upon the salt marshes and elsewhere, turn most distinctly yellow when cut or bruised; but this is simply because they are specimens of the Horse Mushroom (Agaricus arvensis), and not of A. campestris. Berkeley, in "English Flora," says that A. arvensis may be known from A. campestris by its almost white gills when young, and yellow stains when bruised. Most British fungologists regard this change of colour as one of its specific characteristics; and thus it is really a proof of the wholesomeness of the Fungus. I do not remember, indeed, any Fungus which changes colour in at all a similar manner; in fact, excepting one or two of the Lactarii, this particular change is a very uncommon one. Agaricus arvensis, the so-called Horse Mushroom, is by far the most generally eaten Fungus in this country: it occurs far more commonly, is much more abundant, and attains a considerably larger size than A. campestris, the so-called true Mushroom. They are equally good in flavour, and equally wholesome.

In several books certain general rules are given for ascertaining at once whether a Fungus may be eaten or not; they are so absurd, however, that those who know better never think of refuting them. It is not exactly easy to see whether these rules are intended for the discrimination of the Mushroom from other Fungi, or edible from poisonous species generally. Perhaps the most important of these canons is that edible species never change colour when cut or bruised. We have seen how A. arvensis comports itself under such conditions. But there is a variety of A. campestris (rubescens, Berk.) which becomes brilliantly pink at the seat of injury; and this plant is one of the most savoury forms of the Mushroom with which we are acquainted. A. rubescens assumes, as its name implies, a reddish tint, especially where it has been injured by insects. Lactarius deliciosus turns from bright orange to a dirty green, and this alone is sufficient to distinguish it from all its compeers. The mere fact of a Fungus changing to blue cannot be regarded as an absolute proof of its toxic qualities, for a friend of mine has eaten Boletus chrysenteron before he knew accurately B. edulis, and during my noviciate I several times partook of B. bardius without any ill effects whatever accruing. Another rule very commonly relied on is that if a Fungus be pleasant to the taste, and its odour not offensive, it may be eaten; but this is not only a fallacious, but an exceedingly dangerous guide. It is quite true some Fungi are intensely acrid, and are irritant poisons, but upon the other hand, Lactarius deliciosus, one of the very best of our British species, as its name implies, when eaten raw causes a very unpleasant amount of tingling of the mouth and tongue. Far more important, however, is it to remember that a Fungus may have a pleasant odour and taste, and yet be most virulently poisonous. Mr. W. G. Smith was poisoned by eating less than ½ oz. of A. fertilis, which had anything but a disagreeable taste. Again A. muscarius has no acridity, neither has A. phalloides or A. Mappa; and whatever may be the character of the two latter, the poisonous properties of the former are well known. It must be remembered that Fungi may be irritant, narcotic, or narcotic-irritant poisons, and while it is possible to recognize an irritant by the taste, a narcotic may be nearly tasteless.

There is one way, and only one, by which, according to Mr. Blowright in "Science Gossip," edible Fungi can be discriminated from poisonous ones with absolute certainty, and that is, by a knowledge of the individual species. As well might a code of rules be laid down for the discrimination of wholesome from poisonous fruits or vegetables as for Fungi. People do occasionally mistake Aconite roots for Horseradish, or Fool's-parsley for Parsley properly so called, but we have no general rules drawn up in this case, neither do people become panic-stricken and eschew the whole race of condiments because of these unfortunate accidents. But if any misadventure occur from eating Fungi, the whole race are scouted and branded as the harbingers of death. In this country Fungus-eating is reserved for the few, but it by no means follows that these few are experimentalists; far from it, for the species they eat have been known to be edible, and have been eaten by the initiated from time immemorial in other lands if not in this. Like other kinds of food, they vary much in flavour, in the facility with which they can be digested, and in their nutritious qualities. Certain excellent species cannot be too widely known, and every housewife should be able to discern them, especially as they have all well-marked characters. Among these may be mentioned—Agaricus procerus, A. gambosus, A. nebularis, Lactarius deliciosus, Coprinus comatus, Cantharellus cibarius, Hydnum repandum, Boletus edulis, Lycoperdon gigantenm, and Fistulina hepatica. Occasionally we hear vegetarians say they live upon some fabulously small sum—a few pence per diem; and although very few people indeed would care to debar themselves of wholesome, nutritious food for the sake of a mere theory, yet it cannot be overlooked that the continued and continuing increase of the population will eventually demand a full development of the resources of the country. There cannot be a doubt that the esculent species of Fungi will in the future occupy a most important place in the dietary of the nation, not simply because of their cheapness, but rather by reason of their nutritious qualities and the large proportion of nitrogenous compounds which they contain.

TOMATOES AND THEIR USES.

No kind of garden produce has risen in popular favour more rapidly than Tomatoes; for, although they have been grown in gardens for years under the name of Love Apples, the demand for them until recently has been comparatively trifling. Now, however, they are not only used in large quantities for sauce, but have become an important article of diet cooked in a great variety of ways, and it is even not uncommon to meet with people who use the Tomato in its raw state as a dessert fruit. The consequence is that vacant spaces on walls that have long yielded Tomatoes enough for all requirements are no longer sufficient to meet the increased demand, and large quantities have to be grown in sheltered sunny positions out-of-doors trained to stakes. These in fine seasons yield good crops; but it is under glass that the greatest progress has taken place in Tomato culture, for, thus circumstanced, they yield a continuous supply, and require but little attention, as they are less liable to be attacked by insects or disease than most crops. They can be so readily raised from seed that any other mode of obtaining them is seldom practised; but for pot culture or for keeping a good strain true, recourse should be had to cuttings which root quickly and freely, and come into bearing in a shorter period when seedlings. There are now many good varieties of Tomatoes in cultivation, but few of them excel the old Smooth Red, if carefully selected. For making really good Tomato sauce we find the following receipt both simple and satisfactory:—Extract the water from the Tomatoes by steaming or boiling them; strain through a hair sieve, and to 2 lbs. of pulp add 1 pint of vinegar, 2 oz. Garlic, 4 oz. Shallots, ½ oz. of ground white Pepper, ½ oz. of Cayenne, and a little salt; boil for two hours, and bottle when cold.

Henham. James Groom.

Cos Lettuce.—If Mr. J. Cornhill (see p. 318) has not grown Sutton's Superior White Cos, I would recommend him to try it by the side of the Paris White Cos, of which he speaks so highly, when I feel certain the former will, in all respects, establish its superiority; such at least has been my experience regarding it.—W. W. H.

DOUBLE-FLOWERED ARROW-HEAD.

(SAGITTARIA SAGITTIFOLIA FL.-PL.).

The common Arrow-head is a widely-distributed plant, being found in ditches and pools throughout the greater part of Europe and Central and Russian Asia to the Arctic regions. It may be readily propagated by means of the tubers which are produced on its creeping root-stock, and should have a place in all shallow tanks and streams. The flowers, which are white, are borne on stout erect scapes among acutely

Double-flowered Arrowhead.

pointed bright green hastate leaves. Only a very few years ago this pretty water-side plant used to grow in the Thames just opposite the Temple Gardens, and quite recently we have met with it in suburban ditches flowering freely. The accompanying illustration of this aquatic was made in Mr. Parker's Nursery in August last, and represents the double-flowered or proliferous form of the plant, which is far more attractive than the normal type, which is itself, however, one of the most distinct and graceful of all our native water plants. The individual flowers measure 1 in. in diameter,

Bloom of the above (natural size).

and are as double as a Banksian Rose, the crystalline petals being of snowy whiteness, and the entire inflorescence is well adapted for decorative purposes, as it remains in beauty in water, for a long time after being cut. It is a most attractive plant and well deserves naturalization by brook or pond margins along with the fragrant Aponogeton and other delicate and beautiful water flowers. B.

Ageratum Countess of Stair.—For lines and masses this is one of the best of Ageratums. With me it has been in beautiful condition this season. It is very dwarf, being not more than 10 in. or 12 in. in height, compact in habit, a free grower, and a most profuse bloomer. It is best propagated by means of cuttings, as seedlings grow too strongly to bloom well.—R. Greenfield, *Warwick.*

COTTAGE GARDENING.

Vegetable Culture.

In the arrangement or laying out of cottage gardens several advantages will be obtained by growing the fruits and vegetables separately, that is, not intermixed, as at present. In the first place there would be a saving of labour, as the groups or patches of fruit trees would not require the same amount of manuring or digging as should be given to annual crops of vegetables only. If the ground occupied by fruit trees had been thoroughly trenched and prepared before they were planted, after the first half-dozen years little beyond surface culture and cleanliness would be required. Another advantage possessed by this system of grouping would be the shelter it would give, for by planting the Apples on the windward side, and afterwards the Pears, Plums, and Cherries in rotation, the hardier trees would shelter the tender kinds, and fruit trees in spring often suffer as much from cold, cutting winds as from actual frost. There is a curious instance of this in our orchard this year. On the north side of the outer row of trees there is hardly a single Apple, whilst on the south side there is a very fair crop. This is entirely due to the wind last April, when the trees were in blossom. I believe the subject—separating the fruits from the vegetables—fully merits the serious consideration of all who contemplate making new gardens or renovating old ones. I should have no objection to low espaliers of Gooseberries or Currants, as they might be planted close to the walk and be utilized for edgings instead of Box or anything else equally unprofitable. It may be thought that there is a saving of space by growing fruits round vegetable quarters, but this is a mistake, and both the fruits and vegetables suffer by being intermixed; and this will be more apparent where the soil and climate are unfavourable, though of course espaliers are less objectionable than any other form, as they occupy less space and consequently shade less. Wherever the garden is irregular in shape—which many cottage gardens are—the fruit trees might be so arranged as to leave the plots for vegetables, either square or oblong, with the longest side facing the south where convenient, as with most crops, there is an advantage in having the rows of vegetables run north and south, so that the sun may shine equally on all sides of them. Late Peas in very hot weather might form an exception to the rule, especially if several rows be placed side by side, which however is not the best way of growing them. The question as to the number and width of the garden walks must in the main be decided by each individual occupier, who will no doubt be guided by the extent of his garden, which if it be small may simply be intersected by a path down the middle, or if large a path round the outside in addition; but no more walks than are absolutely necessary should be made, and those should be well formed so that they may at all times be dry.

Trenching.

Deep stirring of the soil is one of the most important points in vegetable culture. There is no soil that cannot be improved by it, but its effect will be most noticeable on cold, heavy clays. In all such soils there is a vast mine of fertility locked up that only requires to be judiciously worked to have a marked effect upon the crop. During autumn and winter every half-hour that can be spared should be devoted to this work. Cleanliness and surface-culture of the soil are to a certain degree effective in the development of plants, but without deep stirring the land will not produce to the full extent of its capability. The past dry season has severely tried the crops of the shallow cultivators, there being no better test than a dry season to prove the advantages of deeper culture; manures in such cases, near the surface, do not produce their proper effect, and the plants in many instances, if they do not actually perish, are stunted and dwarfed for want of a deeper and firmer grasp of the soil. Moisture is one of the greatest essentials in the cultivation of succulent vegetables; and probably if our springs and summers were universally hot and dry, the importance of deeper culture, as one means of attracting and retaining moisture in the land, would be more generally recognised. At present, when a dry, hot summer comes, and plants are perish-

ing from drought, it is found convenient to ease our minds by throwing all the blame of indifferent crops upon the weather instead of trying to ascertain whether the system of culture adopted was the most suitable to our fickle climate. In trenching land where the subsoil is very inferior, probably in extreme cases some injury may have resulted from bringing up too much of the crude inert soil from below to the surface. All clays are retentive of moisture in wet seasons, but they often crack and part with it too rapidly in dry, hot summers. Now all this may in a great measure be improved or counteracted by deep culture. The drainage in wet seasons would be more effectual, and in dry weather the advantages of deep culture would be twofold—there would be greater facilities for the plants striking their roots downwards, and the loose subsoil would encourage the ascent of moisture from the water bed below on the principle of capillary attraction. On wet lands, wherever artificial drainage may be necessary, it should always precede all other measures for ameliorating their condition. A test hole 3 ft. or so deep will readily tell if artificial drainage be necessary. If water stands in the bottom of the hole for any length of time at any season of the year, the drainage is certainly imperfect. In dealing with a bad subsoil, it will be better to try and improve it without bringing any to the surface. This can most effectually be done by removing the top spit, as in bastard trenching, and then digging or forking into the bottom any fertilizing substance, such as manure, ashes, road scrapings, or burnt earth—anything, in short that will tend to open up and disintegrate the crude mass. In this way a steady improvement will go on; air and water will percolate through it more readily, rendering its mineral constituents more soluble and suitable for plant food, and in the course of time portions of it may be brought to the surface, and still further improved by exposure to the frosts of winter.

Manures and their Application.

In garden economy the management of the manure-heap has a most important bearing upon profitable culture. All perishable substances have a certain manurial value, some for their mechanical effects, others for their stimulating properties. For heavy land ashes, lime, soot, and sand are exceedingly valuable; in like manner clay and marl may be profitably applied in considerable quantities to light land. It is best applied in the winter after the land has been trenched, left exposed all the winter to pulverise, and lightly forked in in spring before the land is cropped. A good dressing of clay is supposed to be beneficial for about ten years. The persevering, thoughtful cultivator will store up every bit of waste matter for his manure-heap, and it is altogether impossible to make a mistake in this respect, as everything that will readily decay may be added to the heap, and in proportion as the manures accumulate and are given to the land so will the crops improve. The manure-heap should be formed in a hollow or pit near the pigsty, where everything that comes off the land or that can be gathered from the ditches or roads in the neighbourhood should be conveyed. When fermentation takes place, if any bad smell arise scatter dry earth over it; this will arrest and absorb any effluvia or gas that may escape from the heap, as well as add to its bulk and value. I am assuming that every cottager who has at least 30 rods of garden will keep a pig, for the double purpose of eating up all waste vegetables and making manure. Liquid manure is especially useful for any crop that requires a concentrated stimulant, as it can be given just at the time it is required, and in the winter, if of no other use, it can be applied to stunted old fruit trees, taking the spread of their branches as a guide. Some years ago I treated some old Apple trees in this way several times during the winter, and the effect, as demonstrated by the produce, was marvellous. Asparagus beds, old Raspberry plantations, or old Gooseberry bushes would be much benefited by an application of liquid manure at any time when it is not required for other crops. In small gardens the pigsty can easily be screened by planting a row or two of pyramidal Pears or other fruit trees around it. The old idea of resting or fallowing land is now well-nigh exploded, experience having taught us that by the application of suitable manures, that is, by returning to the land as far as possible the same substances that have been taken from it, the earth is practically inexhaustible; hence, there is a manifest advantage in collecting the manure from as many sources as possible for the successful development of all kinds of vegetables, and special attention should be paid to the gathering in of what is usually called rubbish. All substances that do not readily decay, such as hedge clippings, prunings, &c., should be placed by themselves, and be occasionally charred as the heap accumulates. This can be done by setting fire to it on some dry day; when well alight place over it any other rubbish, such as weeds, &c., not too heavily at first, and gradually enclose the heap all round, so that the heat of the fire is confined within it. As the fire dies out the whole will crumble down into a black charred mass, which, when passed through a sieve to take out stones or rough pieces, will make a valuable compost for Onions, Turnips, or Potatoes, or for covering any small seeds in cold, heavy soils. If stored away in a dry place it will be found very useful in the winter for dusting over young plants of the Brassica family, Lettuces, &c. Salt is a valuable fertilizer, especially for dry, porous soils, and deserves to be more extensively used. Artificial manures are not much used in small gardens, but where there is a scarcity of other manures, and even where other fertilizers are plentiful, a slight sprinkling of guano or superphosphate will often push a young crop through a critical period with safety. On some soils phosphates are more beneficial than ammoniacal manures. This will be found more especially the case when applied to old gardens, where the soil is rich from frequent manurings, but deficient in lime.

Seeds and Seed Sowing.

It is mistaken economy to buy cheap seeds: breed, or purity of strain—induced by constant selection—has a value in seeds beyond their mere germinating powers. Seeds may grow well, and produce a strong plant, and yet the crop be inferior for want of the necessary care in the selection of the stock. This is often lost sight of by the purchaser of cheap seeds. All seeds should be sown in drills, for not only is there a saving in the quantity used, but less labour will be required in cleaning and thinning the crop. Early sown crops should not be covered so deeply as those sown later when the sun's warmth has penetrated the soil, and raised its temperature. Large seeds, like Peas and Beans, may be covered about 2 in. Smaller seeds, from ½ in. to 1 in., making some allowance for the condition of the soil when sown, and the period of the year. For instance, when sowing Peas in December or January, unless the site is very warm or dry, it is better to sow in the surface soil than to lay the seeds in a wet, cold medium, where the plants, when they do struggle through, will be weak and spindly in their growth, and incapable of withstanding cold; whilst successional sowings, when hot weather may be shortly expected, will thrive better in deep drills or trenches, as by such a course they are enabled to obtain a greater amount of moisture for a longer period. Showers in summer always water the hollow places most; therefore when artificial waterings are necessary the moisture will be the more easily retained around the plants. Although it will be desirable to sow as nearly as possible on the dates that will be hereafter given (making some allowance for the climate of the place in its relation to latitude, and other special circumstances, such as shelter and elevation, which have in some instances a great influence upon the growth of early vegetables), yet, when dates are given for the planting or sowing of certain crops, it should be understood that they are always to be subject to the weather and the natural condition of the soil. During an experience of many years, I have always found that, by waiting and watching, and seizing a favourable opportunity when offered, a good seed-time could generally be secured. In dealing with heavy land in a difficult season, I have derived great advantage from having a heap of light, rich compost, in which the charred remains of the rubbish-heap formed a considerable portion, to cover all small seeds. This is a matter that calls rather for forethought than extra labour, and the benefits derivable therefrom will be found to be great; when one has to deal with a heavy, tenacious soil, in an ungenial season, it is also a great consolation to the cultivator to feel that reliance may be placed upon every good seed growing, even supposing that extra

trouble had been incurred. I have very frequently heard complaints of flower seeds not growing when sown in the open borders in spring, and the seedsman blamed for supplying bad seed, when really the fault has been in the way the ground has been prepared, and the seed has been sown. It would be far better to sow hardy annuals in August, for then the land is warm, and every seed will grow; but in March and April the soil is often wet and cold, and small seeds, if carelessly sown, will soon perish. If, however, the seeds be sown when the surface is dry and lightly covered with warm, sifted soil, there will be no difficulty in obtaining a good crop of plants. Sow only where the land is in good condition to receive the seeds even if you have to wait a week or ten days for a favourable opportunity. Sow thinly, for when you have bought reliable seeds there is a waste both of seeds and time in thick sowing. Commence thinning the young plants early, and examine them two or three times before that operation is finally completed. During cold springs the young plants derive a good deal of shelter from near association with their neighbours, all that is necessary to guard against being overcrowding from thinning being too long delayed. A crop neglected in this particular never turns out well.

Rotation of Crops.

It is not an easy matter to lay down suitable rules for any régular system of cropping small gardens, and even when the plan is decided on it is still more difficult to carry it out where close and continuous cropping is the order of the day. It is not like cropping a farm on the four-course system, where every year's crop, like a piece of well-fitting machinery, is made to dovetail into the next; but there are certain general principles that must not be lost sight of, although it may not at all times be possible to carry them out. There are some crops—such as the Cabbage tribe, for instance—that may be termed exhausting crops, and these should never be planted on the same land two years in succession. Others, again, such as Celery, Peas, and Onions, that usually have the land highly manured before planting, leave it in a much less impoverished condition, Onions having been successfully grown on the same land for many years; and in a garden where the Onion maggot is troublesome I believe there is an immense advantage in so doing, as from the frequent dressings of soot, and other remedies applied, the land becomes distasteful to it. For several years past I have grown Carrots on the same plot of specially prepared ground with a marked improvement in each succeeding crop, and I should recommend any one to try this plan where the maggot is at all difficult to eradicate. Potatoes have been in some gardens grown on the same land for many years. I do not recommend it as a good practice, but in small gardens it cannot always be avoided; but much may be done to mitigate any bad effects arising from this course by a frequent change of seed. Where deep culture is systematically carried out, and where the manure supply is ample, the constant and complete rotation of crops loses some of its importance. Still, even where these advantages are always present, no two crops of allied genera should follow each other in direct succession if it be possible by any means to avoid such an arrangement. I should strongly recommend all small occupiers to grow only early and second early Potatoes. There are good keeping kinds now that are fit to lift before the disease makes its appearance in most seasons, and when cleared off there is ample time to crop the land again with winter Greens of all kinds, including also a few Cauliflowers, Turnips, winter Spinach, and winter Onions. And if the land were in good heart there would be no necessity to dig or manure to prepare it for these crops. If cottagers planted Potatoes that ripened early, and that would keep sound for use during winter, their gardens would produce nearly double the amount of food in each season that they do at present. As a rule, in small gardens, there is too little variety in the crops grown, and there is too frequently a dearth of both Greens and salading. A small pinch of Lettuce seed, for instance, sown once a fortnight or three weeks from March to September will produce a regular and successional supply, and, there would be no necessity, in arranging the spring cropping to leave land especially for this, as occasionally a few seeds might be scattered amongst other crops, such as Onions, &c., and in hot weather they will grow under the shade of fruit trees, where but few plants will thrive.

Watering and Mulching.

Even in the best arranged places irrigation has generally been looked upon as a matter of quite secondary importance; therefore it is hardly to be expected that cottage gardeners would realise its full value, though I believe that if a good supply of water in a kitchen or fruit garden could be easily applied it would double the produce; yet, unless there are facilities for doing it thoroughly, it would be better to divert the labour attendant thereon into a channel calculated to mitigate or counteract the effect of a long drought. Watering on the surface only, without giving sufficient to reach the main roots, is of very doubtful utility even when administered every evening; but if it can only be done occasionally it is worse than useless, because it tends to draw the roots to the surface, and when the water is withheld they perish. I have already referred to deeper culture as a ready means of enabling vegetables of all kinds to withstand drought, and mulching as a preventive is of the greatest possible utility. Half-decayed manure is the best material to employ, as it not only checks evaporation in a most efficient manner, but it also enriches the soil, as every passing shower carries the ammonia to the roots of the plants; it may either be spread on the surface about 2 in. thick, or, where its appearance may be objectionable, covered with loose soil; Grass, or litter of any kind may also be usefully applied in the same way. Whenever it is decided that any crop must be watered let it be done in the evening, and thoroughly; and if the surface cannot be mulched loosen it up with the hoe the next day. I like to water two or three evenings in succession, and then leave the crops unwatered for two or three days, at the same time using the hoe freely in situations where mulching is impossible.

Hoeing.

Next to the spade the hoe is on most soils the most useful implement in the garden. Hoes are made of various shapes, but two only need now be alluded to, viz., the Dutch hoe and the draw hoe; the former is best adapted for earth-stirring purposes or destroying weeds, and the latter for drawing drills or drawing earth up to the stems of growing crops. During fine weather, when the surface is dry, the Dutch hoe should be constantly in use, not only for the purpose of destroying weeds when they are small and easily eradicated, but also to keep the soil in a loose, friable condition, so necessary for the encouragement of rapid growth in vegetables. The surface should be thoroughly broken up about 2 in. deep. It is a waste of labour to let the hoe slide over the hard crust as some men do, and then call such a mere tickling of the surface hoeing. When land becomes hard on the surface it parts with the moisture much more rapidly, as well as ceases to attract moisture from the atmosphere in the same way as a loose, open surface.

The Early Border.

As the season comes round there is even in the smallest establishments a desire for early Potatoes, Peas, Cauliflowers, Cabbages, salading, &c., and this is a want that may be easily administered to, for where no warm, sheltered border exists, a very small amount of ingenuity will improvise shelter and protection. After selecting the site, which should have a southern exposure, but need not be in any conspicuous position, trench the ground up well, adding as much good soil and thoroughly-decayed manure as can be obtained. A light, warm, porous soil is the most desirable for very early crops, and it should also be deep, while the surface should lie with a considerable inclination to the south so as to catch every ray of sunshine. Even where the soil, from its tenacity, is difficult to work, there should be no insuperable difficulty in altering its character in the case of the early border. If it cannot be made so good as desired in one season, by adding to it annually whatever comes to hand calculated to lighten and improve its staple, it will gradually increase in both earliness and productiveness. If any movable glass frames be available the progress of the crops will of course be much accelerated; but even without the aid of glass much may be done. There is a

great deal of protection in a thin scattering of dry straw, and if the untidiness inseparable from its appearance be objected to, straw or Reeds can easily be made into mats that will last several years. Another way of utilising straw, Reeds, &c., for this purpose is to place them between a thin, light framework of laths; there are various forms and modes of doing this that will readily suggest themselves to the cottage gardener, so that I need not take up space by entering into particulars. Straw covers if kept dry when not in use will last several years if handled carefully: I have some that were made two years ago that are now in good condition. E. Hobday.

Packing Strawberries.—Strawberries to be sent any distance should consist only of such kinds as will carry without risk of being damaged on the journey, as the finest fruit is of no value if it arrive at its destination bruised or otherwise damaged; even, however, in the case of the firmest-fleshed sorts considerable precaution is necessary in order to insure success. I found from experience that the best material in which to pack Strawberries are the leaves of the green garden Orach (Atriplex hortensis); I therefore always sow a certain quantity of Orach seed in March or April so as to have young leaves available for packing purposes before the crop of Strawberries is fit for use. For packing I use shallow boxes of various sizes which do not hold more than two or three layers of fruit; I line the bottom with Orach leaves and thereon put the Strawberries packed closely together. The first layer being finished I again use Orach leaves, and so on until the box is full, when I add a good layer of leaves on the top, so that when the cover is put on the boxes will, if necessary, endure hard usage for a couple of days without their contents being in the slightest degree injured. I have frequently sent Strawberries packed in this way both by post and rail over 200 miles, and once by steamer to Scotland, and they have invariably arrived in excellent condition. The sorts which I prefer for such purposes are La Constante, Sir Joseph Paxton, Waltham Seedling, Duke of Edinburgh, The Countess, Early Crimson Pine, Cockscomb, Fairy Queen, Lucas, Dr. Hogg, Unser Fritz, Ascot Pine-apple, and Duc de Magenta, all of which may be picked when quite ripe; whilst President, Frogmore Late Pine, and James Veitch, should be gathered a day beforehand. It is of course useless to attempt sending such soft kinds as Black Prince, Marguerite, Keen's Seedling, jucunda, &c., however handsome they may be, any distance, as they would be sure to be more or less damaged.—Ferdinand Gloede, *Hamburgh.*

Pears at the Ends of Branches only.—The Pears on a wall near Winchester are all produced at or near the ends of the branches. It would be more satisfactory if they were more evenly distributed over the tree. How can this be brought about?—W. T. T. [This is clearly a case of over-luxuriance; the tree bears at the ends of the branches simply because the vigour is spent there. Root-pruning will cure it; do one half of the roots this season—now, and the other half next year at this time. Proceed by cutting a deep trench from the wall half-way round the tree, and 10 ft. or 12 ft. from its bole. Cut all the roots found growing beyond that point, and work under all that are found inwards, and lift them to within 18 in. or less of the surface, until the bole is reached and the spade can be pushed right under it. This will check the gross growth about the centre of the tree, and next year's pruning of the other half will most likely throw the tree into a very fertile condition all over. In addition to root-pruning keep the young shoots pinched during the summer at every third or fourth joint, and prune back when the leaves have fallen to one or two buds.—J. S. W.]

Vineyards in England and Wales.—I notice (see p. 304) a paragraph doubting the success of the Cardiff Vineyard, and recommending Kent or Sussex as more likely to answer the ends in view. I believe that I am expressing the sentiments of gardeners generally in wishing the Marquis of Bute and his gardener Mr. Pettigrew every success, and we feel sure that, so far as cultivation is concerned, all will be well and ably done. But no one can make climates except under glass. Having lived for many years in Sussex, Surrey, and Kent, I give the preference to Sussex as a Grape-growing county. I well remember fine clusters of Black Prince growing against a house at Arundel which for colour and weight would have borne favourable comparison with those produced by the same variety indoors; and Black Hamburghs, not with that colour and finish to which Mr. Coleman brings them, but weighing 4 lb. Of all out-door Grapes, however, give me Royal Muscadine, or, as it is sometimes called, Chasselas de Fontainebleau. The stiff loam of Arundel intermixed with flint stones, for drainage purposes, suits the growth of Vines admirably.—R. Gilbert, *Burghley.*

PLATE XLI.

AMERICAN COWSLIPS.

(WITH A COLOURED FIGURE OF DODECATHEON INTEGRIFOLIUM.)

This small genus of Primroseworts consists of species which grow in woods in North America, where they are known by the name of Shooting Stars. They are all perennial and perfectly hardy in this country, requiring a cool situation and light, loamy soil; the nature of the latter is, however, of but small importance, as I find that they grow as freely in peat or leaf-mould as they do in loam; situation is the principal point in their cultivation. In shady spots on rock-work, or in cool secluded nooks in borders where Primulas and Soldanellas thrive, Dodecatheons will be found to soon establish themselves, and in spring to form lovely and attractive objects. All the species and varieties of this genus with which I am acquainted grow freely, and soon form large tufts, which require dividing every third or fourth year. The best time for performing this operation is the latter end of January or beginning of February, when the roots are becoming active, taking care not to divide them into too small pieces, as in that case there is danger of losing the plants while in a weakly condition. Dodecatheons may also be easily raised from seed, but this can only be obtained in very favoured situations. The following are all free-flowering excellent kinds, viz.:—

The Entire-leaved American Cowslip (Dodecatheon integrifolium).—This, the most lovely of the genus, is one of the best rock plants in cultivation. Its foliage begins to make its appearance in March, and when well grown attains a length of from 4 in. to 5 in., forming deep green rosettes, from the centre of which rise the flower-stems, each bearing from six to twelve Cyclamen-like blossoms; the individual flowers are about 1 in. in length, and in colour a rich purplish-crimson, with a bright orange ring at the orifice of the corolla. As an exhibition plant this, in its way, is unrivalled, and as it grows freely and is perfectly hardy, it should be found in every garden. Strong, well-established plants of this produce abundance of seed, which should be sown immediately it is gathered.

Giant American Cowslip (D. Jaffrayanum).—This noble species grows from 2 ft. to 2½ ft. in height, and has large, dark green leaves, from 9 in. to 12 in. in length, furnished with conspicuous, reddish mid-ribs. Its flowers, which are large and fragrant, and of a reddish-purple colour, are supported on stout stems that grow from 18 in. to 24 in. in height, and sufficiently strong to resist wind. In rich, moist, loamy soil, this plant grows vigorously in an ordinary border, but it succeeds best when partially shaded from the mid-day sun. It is thoroughly hardy, and one of the best of our border perennials. It is sometimes called D. lancifolium.

Common American Cowslip (D. Meadia).—This, the best known of all American Cowslips, has a beauty peculiarly its own, and whether grown in pots to bloom in a cold frame, in a house, on the rockery, or in the open border, it is alike a gem amongst spring flowering plants. Clumps of it should be seen in every available situation wherever shade and moisture can be found. Well-grown masses of it may often be found with from ten to twenty stems, each bearing from eight to twelve flowers, and in the case of some varieties of it from twelve to thirty blossoms on a stem. The flowers, which are purplish-coloured and fragrant, are produced in umbels on erect, slender stems, which grow from 12 in. to 15 in. high. Of this there are numbers of pretty and distinct varieties, differing more or less in size of flower, colour, and height of plant. Among the best of these may be mentioned D. giganteum, elegans, albiflorum, and violaceum. D. californicum, thought by some to be a species, is probably only a variety of D. Meadia. It is, however, a distinct and pretty plant, and well worth growing. D. frigidum, a rare species, is, I believe, not at present in cultivation.

The species represented by our plate, as well as other kinds just named, may be seen at Ware's Nurseries, Tottenham, and, indeed, in most establishments in which hardy plants are grown. J. P.

Seedling Gloxinias.—Where decorative plants are in request during the summer and autumn months these are invaluable; they are so well adapted for edging plant stands or stages of any kind, that they may truly be said to combine the good qualities of both flowering and fine-foliaged plants. We usually sow the seeds in February in moist heat, and as soon as the young plants are large enough prick them off into pans in light, rich compost. By sowing in succession, a good display can be easily kept up until November, and the bulbs if carefully preserved make fine plants the following season for early flowering.—J. G.

MY DIARY FOR SEVEN YEARS.

By W. DENNING.

October 9.—*Potting* up Carnations and Pinks; also Pelargoniums from flower borders, consisting of Mangles' Variegated, Flower of Day, and Christine; likewise old plants of Centaurea—potting hard and watering well first time. *Miscellaneous*—Putting Purple King Verbenas into cold frame; re-arranging the plant-houses, introducing Primulas, and clearing out Peach-case ready for Chrysanthemums; putting Thyrsacanthus and Sericographis in stove; placing all Strawberry plants in pits under cover; inserting Calceolaria cuttings; planting Hyacinths and Tulips in open borders; planting Peach trees; pricking out two frames of Cauliflower plants; tying up 200 Endive; tying Azaleas on wet days; using scarlet and white Pelargoniums for dinner table decoration; gathering Beurré d'Aremberg and Winter Nelis Pears, and a few of Knight's Monarch; sending in Coe's Golden Drop, Magnum Bonum, and Reine Claude de Bavay Plums; Coe's Late Red Plum ripe; making border in front of Cucumber-house ready for Cauliflowers; beginning to make another Mushroom bed; re-arranging drainage, and top-dressing Roses in pots after removing as much as possible of the old soil; giving bearing Cucumbers a top-dressing of loam and manure; clearing borders from dead or bad-looking stems of herbaceous plants; putting lights over scented-leaved Pelargoniums, Violets, and a bed of Mignonette.

Oct. 10.—*Potting* up plants of Echeveria glauca, and putting them in the greenhouse. *Miscellaneous*—Placing a few of the most forward Cinerarias in heat; planting Cabbages for spring 6 in. apart in the rows, so that part can be taken up in spring to make another bed; making up failures among spring Lettuces; planting Cauliflowers under hand-glasses; taking off Chrysanthemum layers; laying Lilies on their sides after potting; syringing Azaleas again for thrips; putting Fig trees in pots into orchard-house.

Oct. 11.—*Potting*—Forget-me-nots, also Schizostylis for winter flowering. *Miscellaneous*—Taking in Chrysanthemums; putting Daphnes into span-roofed Peach-house; taking up some of the most forward Cauliflowers and putting them into a trench for protection; planting Stephanotis in small bricked bin; pricking out a bed of Cabbage plants to remain until spring to be then planted permanently; sending in the latest Walburton Admirable Peaches; gathering the latest Pears; beginning to take up Beetroot; only shading Orchids about an hour now in middle of day, except Phalænopsis, which are shaded from 10.30 a.m. to 2.30 p.m. if the sun be very bright. Temperature of Orchid-houses, viz., East India-house, 70° by night, 75° by day; Cattleya-house, 65° by night, 70° by day; Dendrobium-house, 65° by night, 70° by day; Vanda-house, 65° by night, 70° by day; Lycaste-house, 60° by night, 65° by day; Mexican-house, 60° by night, 65° by day; Odontoglossum-house, 58° by night, 63° by day, keeping all evaporating pans full.

Oct. 12.—*Sowing*—Fulmer Beans to keep up a supply; other sowings should be made on Oct. 20, Nov. 8, Nov. 22, and Dec. 6; placing in bulb-bin first batch of bulbs, viz., Roman Hyacinths and Narcissus for cutting and for stands; plunging Stocks in cold frame. *Miscellaneous*—Planting Wallflowers in flower-beds, also Aubrietias, Arabis, Pansies, bulbs, Feverfew, and Cerastium; tying Chrysanthemums, also 200 more Bath Cos Lettuce; bending leaves over Cauliflowers ready to cut; beginning to nail wall trees; fumigating Orchids again strongly for thrips; gathering the last of the Apples, Nonpareils, and the last dish of Plums; sending in Raspberries daily; roping Onions in wet weather; earthing up July-sown Cabbage; stubbing up a few more useless wall trees; keeping Vineries from 50° to 55°, or according to heat required in pipes, Grapes being all ripe; keeping Pelargonium-house about 50° at night in order to keep the plants flowering.

Oct. 13.—*Potting* off some herbaceous Calceolarias; re-arranging Odontoglossum-house. *Planting* Gooseberries and Currants behind north wall. *Miscellaneous*—Nailing Currant trees, &c., on north wall; also Gooseberries; cutting Marjoram, and placing it where it will dry; digging vacant ground; pruning Cotoneasters on walls; picking all loose leaves off Peach trees to let light in to Pelargonium cuttings; out-door flowers nearly over; if fine weather set in there would be a few Sweet Peas, Dianthus, Roses, Michaelmas Daisies, Mignonette, and Violets, all pretty good; keeping Tea Roses and Primula pit at about 55° at night.

Oct. 14.—*Sowing*—Mustard and Cress in boxes under cover. *Potting*—Second batch of Hyacinths. *Miscellaneous*—Taking up Lettuces and putting them in pit; taking up all bedding material that is to be saved; re-arranging Cattleya-house; planting fruit trees consisting of Peaches, Nectarines, Pears, Apples, Plums, and Cherries; cleaning paint in all Orchid-houses; Primulas coming finely into flower; very short of Apples and Pears now until Ribston Pippins and autumn Bergamot Pears come in; should have plenty of trees of Coe's Golden Drop Plum, Kerry Pippin Apple, and Doyenné Blanc and Hessle Pears; all leaves off in first and second Peach-houses. *Orchids in flower*—Cattleya Pescatorei, C. maxima, C. Harrisoniæ, Pleione lagenaria, P. Wallichi, Odontoglossum grande, O. Uro-Skinneri, O. Halli, Pescatorea Wallisi, Dendrobium formosum, D. chrysanthum, Sophronitis grandiflora, Vanda tricolor, Phalænopsis Lowei, Cymbidium giganteum, and Saccolabium bigibbum.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Veronicas, such as Andersoni, salicifolia, and their numerous hybrids, are particularly adapted for amateurs, who have not had much experience in plant culture; they are very easily propagated, easily grown, and not impatient of a few degrees of cold or of extremes in the way of getting over-wet or a little too dry, such as would kill many plants. Their habit of flowering continuously through the autumn up to the end of the year in either a greenhouse or living room makes them additionally valuable at this season. Plants that were struck in spring and planted out-of-doors, as was then recommended, will by this time have made moderate-sized specimens, furnished with flower-spikes at every joint from the points of the shoots for some distance downwards; they should at once be taken up and potted, lifting them with a fork, so as to preserve, if possible, all the roots intact; they will require pots from 8 in. to 12 in. in diameter, according to the variety grown and the size of the plants; give them more drainage than would be required for subjects that do not want so much water as these Veronicas; they will succeed in any ordinary, moderately light, porous soil. As soon as potted give water enough to moisten the whole, as Veronicas are amongst the limited number of plants that must be watered immediately they are potted; if this be not done the leaves will flag—an occurrence which would most likely have the effect of causing the unopened flowers to drop; if well attended to and kept in a frame, pit, or in a room, with the air a little confined, for a week after they are potted, so as to give their roots a chance of beginning to act, they will continue blooming for many weeks. These and numbers of other plants that are handsome, free-flowering, and easily managed, are quite equal in every respect to many subjects that are much more difficult to grow.

Pits and Frames.—Where the means for wintering plants that require protection from frost are confined to ordinary unheated frames or pits, with such coverings as are available in the shape of straw or bast mats, Fern, litter, wooden shutters combined or separate, they should at once be got ready, for if the required supply be not prepared until absolutely needed, loss or injury of the plants will follow. The walls of an ordinary brick-built pit, or the boards of which a hotbed frame is composed, are sufficient to ward off an ordinary night's frost, but quite unequal to protect plants from a severe continuance of it. Few materials are equal as a non-conductor to straw laid straight and secured round the sides and ends of the frames to the thickness of 12 in., and kept quite dry by means of boards fixed in the way of a coping, so as to throw off the rain. Simple and old-fashioned as this kind of protection may seem, the modern introduction of heating by hot water has not yet driven it out of existence, even in some of the best-managed London nurseries, in which thousands of tender plants are still kept in straw-protected pits with ample covering for the lights; and much may be done in this way by amateurs, especially near the coast or other favoured spots where frost is not usually very severe or continuous. The great point is to keep the protecting material quite dry, and to effect this there is nothing so good as wooden shutters to lay over the top of the straw, or Fern, and mats, with which the glass should be covered. Another advantage in their use is, they do away with the necessity for nightly tacking on the mats to keep them and the loose material from being displaced by wind. They need not be heavy; ¾-in. boards are quite strong enough if securely battened together, and strips 2½ in. wide and ½ in. in thickness are nailed longitudinally over the joints to throw off the rain. If two coats of hot gas-tar be applied to the upper surface of such shutters, they will last for twelve or fifteen years, with an additional dressing of tar once in two or three years. The tar should always be laid on thinly, and a couple of months before the shutters are required for use, by which means the disagreeable effects of its coming off on to the hands in moving them about will be avoided. Shutters of this description can likewise be used for other purposes besides the one just named. They are also serviceable for covering bedding plants that are turned out to harden in the spring, during summer for shading newly-planted Celery, Lettuce, or Cauliflowers, or protecting Endive or Lettuce from sharp nights

in autumn; in short, no garden should be without a good supply of them. Where these appliances for wintering plants are to be used they should be got ready at once. Where plants have to be wintered in such structures the worst enemy to guard against is damp, to avoid which they should be placed upon a stage made of common boards elevated on bricks slightly above the level of the floor, so that the air may be able to circulate under the pots, and in this way keep the whole drier; the plants should also be examined once a week through the winter and all dead leaves picked off, which will turn mouldy if not removed. Such plants as Cinerarias, the different flowering varieties of bedding Pelargoniums, Calceolarias, Fuchsias, Hydrangeas, Lobelias, Richardias, Heliotropes, Centaureas, Cineraria maritima, Verbenas, and Veronicas, with reasonable attention can be preserved through the winter by the above means. Success will greatly depend upon the plants being established in the pots and sufficiently ripened during the autumn; the less soft, sappy growth they have about them the better they will withstand the continued close confinement to which they will have to submit if a protracted frost should occur in the winter. For this reason they should now have all the air possible, and with the exception of such moisture-requiring subjects as Cinerarias and Calceolarias, should be kept as dry at the roots as they will bear without flagging. Pelargoniums yet out in beds that are to be wintered in the above way should at once be taken up and placed in pots of a size just capable of holding their roots, with the smallest amount of soil necessary to their well-being during the cold season. Any plant that has to be wintered in a low temperature, especially if at all subject to damp, is much more likely to succeed when its roots are surrounded by the least requisite amount of soil than if more were used. If the above directions be followed, amateurs with no better accommodation than that just referred to may winter a quantity of plants that in the spring and summer will be found very useful for bedding and room decoration.

Seed Saving.—Our climate in this country is fickle, and, for the cultivation of some plants, indifferent as it is, is often credited with a worse character than it really deserves, especially so far as relates to its capability of enabling the seeds of some flowering plants to ripen in the open air; by reason of this the seeds of many annuals are yearly purchased that might be grown and saved by all who cultivate such plants—for instance, Asters and Stocks, which are usually bought every spring at a cost that tends considerably to limit the quantity grown of these favourite flowers. After a good deal of experience in saving and sowing these, I have arrived at the conclusion that in the south of the kingdom, and in most places where the soil and climate are not exceptionally bad, the above and many other subjects may be grown from home-saved seed in a way that will not only perpetuate flowers equal to those raised from bought seeds, but, if a watchful intelligence be brought to bear upon the subject by selecting and marking the plants at the time they are in flower that exhibit superiority in general habit, and perfection of colour and form of the individual blooms, or a disposition to produce them in greater quantities than usual, a strain, superior in many respects to those plants generally grown from seeds procured from the usual source, may be gradually acquired by any one who has the leisure. I should recommend amateurs who may have had during the season particularly fine flowers of those kinds as mentioned above, when ripe to gather and dry seeds from any plants that they may have noticed producing flowers above the usual excellence. It is by careful attention in selection that improvement is to be made. In addition to the subjects above named, the beautiful Phlox Drummondi, Tropæolums, the best forms of branching Larkspur, French and African Marigolds, and Helichrysums (Everlastings), the flowers of which, when cut immediately they have opened and then hung up in a warm, airy room to dry, retain their colour, and are very handsome for a long time; these are but a few of the beautiful annuals that may be thus perpetuated by home-saved seeds with a little care. Amongst the useful biennials or perennials that may be raised in quantity are Delphiniums, than which there are few more serviceable or beautiful decorative subjects, Violas, Campanulas, Antirrhinums, Dianthus, Myosotis, Pentstemons, Wallflowers, Polyanthus, Foxgloves, Japanese Primroses, and Aquilegias. The above, although not a tithe of what any amateur with the most limited means which an ordinary small garden affords, may, by propagating, have it from spring to autumn always gay with some attractive plant. The great point to be observed in this most interesting branch of gardening is to note and select seeds from such individual plants that from time to time make their appearance and evince superiority in some respect. By careful and judicious selection, even in a small way, the standard character of each species of plant may not only be maintained through successive generations, but improvements may be made that will much enhance the pleasure which the cultivator derives from his garden.

Greenhouse Plants.

Autumnal gales, heavy rains, and chilly nights, render it unsafe to trust hard-wooded greenhouse plants longer out-of-doors, and therefore no time should now be lost in getting all safely housed. In doing so examine all closely to see that they are free from thrips, red spider, and mildew, and if not, means should at once be taken for their removal. Gishurst Compound is often used for the purpose of destroying mildew, but with many of the more choice and delicate-leaved greenhouse plants its application is attended with some risk, inasmuch as it frequently occurs that both leaves and bloom-buds are injured by it. In many cases this results from applying it stronger than is necessary to kill the parasite; it should therefore always be carefully weighed, and never used stronger than 2 oz. to the gallon of soft water, a strength at which it will be found to answer the purpose required: lay the plants on their sides to prevent the solution from soaking into the soil, and syringe them well overhead so as to thoroughly wet both the under and upper sides of the leaves; this done allow them to dry before setting them in an upright position, and when the Gishurst has done its work, which it will do in the space of twenty-four hours, the plants should again have a good syringing with clear water to free them from any filmy deposit left by the solution. In the case of Heaths, many of which are liable to mildew, sulphur will be the safest remedy, as indeed it is for the generality of plants infested with that malady. The best way of applying it is to wet the plants all over by syringing them with clean water, and then to give them a shake to remove any large drops from the leaves, which should then be thoroughly dusted over with flowers of sulphur made dry for the purpose. It can then be easily applied by means of a common sulphur or Tobacco-dust puff, but the best implement for the purpose is the Boîte-à-Houpe, which distributes it in the most regular manner possible so that every leaf becomes enveloped with impalpable powder. It should be borne in mind that sulphur in the soil would prove almost as injurious to the welfare of the plants as a solution of Gishurst or other insecticide, and care should therefore be taken to prevent it from being washed in when giving them water. To prevent this occurring lay the plants on their sides after the sulphur has been on a few days, and wash it off by applying water with some force through a syringe, and afterwards scrape away a slight portion of the surface of the soil, so as to remove any that may have become deposited there. In arranging the plants in the house see that choice specimens have plenty of room afforded them in order that their lower leaves may not suffer from absence of light, which they soon do if crowded closely together. By arranging the large plants at wide distances apart, others of smaller size and less value, that do not require to be so near the glass, can be set between them, thus making the most of the room at disposal, besides which the house will present a better appearance by the pots and stage being hidden from view. In cases where separate houses for wintering Heaths and Epacris apart from the general stock do not exist, they should be arranged together as far as that can be done at one end of the house where they can be kept cooler and accommodated with more air to suit their requirements. Except for early-blooming, free-growing varieties, such as Erica hyemalis, E. gracilis, E. melanthera, E. Wilmoreana, and others of that class, there is no better time than the present for re-potting Heaths, as the roots have a much better chance of taking hold of the new soil than they have during dry summer weather, when there is much risk of its becoming too wet from the repeated waterings necessary to keep the old ball in a sufficiently moist state. If this be well soaked now before potting the plants will go for weeks before requiring a further supply of water, and the fresh peat may thus be kept in a healthy state. See that the pots are perfectly clean both inside and out before they are used, and drain thoroughly by means of finely-broken crocks, over which some Moss or Sphagnum should be placed to prevent the soil from running amongst them. Pot them in choice, rough, fibry peat, which should be rammed firmly round the old ball in order that no cavities may exist whereby water would be able to effect its escape too rapidly and without permeating the whole of the soil. No time should now be lost in carrying out the necessary tying and training of Azaleas, as this should always be done before the young growth made during the summer becomes hard and stiff, or the points of the shoots will not turn up as they should do to give the plants a naturally easy appearance. The excessively stiff form in which Azaleas used to be trained has fortunately given place to a more easy outline that much enhances their beauty. There is no shape in which they look better than that of a pyramid, or one to which they conform more readily with so little assistance and so few stakes. Stakes should, indeed, be avoided as much as possible, and when used the ends should be made sharp and pointed, and thrust to no greater depth in the ground than what would be absolutely necessary to give them sufficient stability to support the branch or stem which it is intended to tie to them.

As regards training Azaleas in pyramidal form, that may generally be done by the use of a single central stake to which to train the leading shoot, and the side branches can easily be kept in position by running five or six pieces of fine wire from the top of the main stake to a stout hoop extending 6 in. or 9 in. beyond the rim of the pot to which it can be made secure. If neatly done, it will scarcely be observed, and it is much better than puncturing the balls of the plants by using a forest of stakes, which, after a time, rot off unless seen to and renewed; and if the decaying ends be left, they are sure to generate root fungi. In all cases, therefore, in which stakes have to be used for plant training care should be exercised when renewing them to see that every portion of the old wood is withdrawn from the soil, and, as far as it can be done, the same holes should be made use of in which to insert others to take their places, in order to prevent further damage to the roots. Chrysanthemums will now be showing their flower-buds, which should at once be thinned out if large-sized blooms be desired for exhibition or other purposes. During this necessary operation make choice of the strongest and most prominent bud, and only leave one to each shoot. With the pots well filled with roots, as they should be at the present time, plenty of liquid manure should be given, the gross feeding habits of Chrysanthemums rendering frequent application of this stimulant necessary to keep them in health and vigour, particularly at this stage of their growth when the soil has become nearly exhausted. If the manure water be obtained from the drainage of the cow-yard or some similar place, it may be given almost at its full strength, but if made from soot, guano, or other hot manures, some discrimination in its use will be necessary. Unless the plants are standing on a hard, solid staging impervious to roots, the latter soon force their way through the bottom of the pots, and get hold of the material on which they are placed. If allowed to do this to any extent, the check on removal when taken in-doors will be so great as to cause them to flag and to seriously interfere with their flowering. To prevent them from suffering at that time they should be occasionally turned round, or have a piece of slate or tile put under the pots, which will keep the roots in their proper places. Many prefer growing their Chrysanthemums in the open ground during the summer and lifting them in the autumn, by which means good healthy plants are obtained, and much time is saved in watering. Where they have been treated in this way, no time should be lost in getting them up and potted, as much of the success in getting them to endure the comparatively dry air of a house, and expand their flowers satisfactorily depends on the amount of time allowed them to get over the check of having their roots disturbed. It will thus be seen that the earlier they are got into their pots the better; but this should not take place till they begin to show their bloom-buds, or they will not produce them so freely afterwards. In lifting them, cut well round them with a sharp spade at a distance of 6 in. or 9 in., according to the strength and size of the plants, and work away as much of the common soil as will allow them to be placed in moderate-sized pots, and leave room for a little fresh rich material to be worked in among the roots. When potted firmly, give them a good soaking of water, and set them in a moist, shady situation, such as under the shelter of a north wall, or in some other position where strong winds will not interfere with them. Keep them well syringed both morning and afternoon, in order to prevent them from flagging, and do not allow them to suffer from want of moisture at the root. Stake and tie the main branches to afford them proper support and get the plants into shape, but use no more sticks than are absolutely necessary for that purpose, as their appearance is most objectionable. Other winter-flowering plants, such as the beautiful Gladiolus-like Schizostylis, Richardias, Spiræas, &c., that have been planted in rich soil and grown out during the summer, as recommended in previous calendars, should now be taken up and potted, in doing which due care should be exercised to preserve as many of their roots as possible. If the Richardias be wanted early, a few may at once be placed in gentle heat, where, with plenty of water afforded them, they will soon begin to show bloom, and continue a succession for some time to come. The Schizostylis flower naturally during the autumn and winter, and only require the shelter of glass to induce them to open their blooms freely, which are always produced in the greatest profusion after the plants have been turned out during the summer and liberally treated. Some we are just potting have more the appearance of Iris, so large and fine are their flag-like leaves and crowns. Cyclamens should now have every encouragement to make free growth by being placed where they can be afforded a moist, genial temperature such as an intermediate-house affords; there they must be kept well up to the light, and have plenty of air on all favourable occasions, otherwise they soon become drawn, and present a weedy appearance. Shift on seedlings as they require more pot-room, and treat them to a growing temperature similar to that requisite for those more advanced.—J. Sheppard, *Woolverstone Park.*

Orchids.

The principal work now requiring attention is the selecting of plants which have completed their growth and preparing them for removal into a cooler and drier house by withholding water at the roots for a time before removing them. This is preferable to moving them into a cool place in a wet state. Most of the East Indian Dendrobes will be found to have completed their growth; some of these, although of large growth, have the reputation of being difficult to manage, but if grown in baskets or on blocks and placed in a cool, dry house from the present time until they again begin to grow, they will be almost sure to give satisfaction. Dendrobium Dalhousieana and D. Wardianum belong to this class, and when grown in pots, unless in an exceptionally good house, they are very short-lived. Many plants ready for resting will be found among the Oncidiums and Epidendrums, and these should if in pots be placed on inverted flower-pots on the stage or on shelves round which the air can freely pass. It is during the resting season that those who have open trellis work wooden stages find the full benefit of them, indeed it is my opinion that such stages are the best for Orchids (or almost any other plants) at all times; with staging of this kind the heated air is allowed to pass freely and uniformly among the plants even in the middle of the large centre stage, and thus an equable temperature is maintained throughout the whole of the house. When the staging is of slate or closely boarded the heated air rises in a current from underneath the stage, and the consequence is, that the first row or two of plants on either side of the pathway are often much injured; at the same time, the collecting of impure air around the lower parts of the plants in the middle of the centre stage often results in the loss of the lower leaves of many fine specimens of Aerides, Vandas, &c. The only thing to be said in favour of close slate and iron stages is, that they are durable, but I am convinced that the old-fashioned wooden trellis-work stages are the best for the plants; and those who use them will be able to keep their plants healthier and better than if grown on close stages. Insect-pests should be carefully looked after and destroyed; cockroaches and crickets become more numerous and troublesome, as the heating apparatus has to be more used, but if they be kept well supplied with Beetle Poison they may easily be kept in check; that worst of all pests, too, the yellow thrip, should be looked after unceasingly, and the plants suspected of harbouring it should be frequently sponged with weak Tobacco-water. The temperatures during October should be—East India or warm house from 70° to 75° during the day, and 65° at night; Cattleya or intermediate house from 65° to 70° by day and 60° at night; Odontoglossum or cool house from 60° to 65° by day and 55° at night, the higher day temperatures being for sun-heat. Those who have but one house should treat it as an intermediate one, and arrange the plants in the warmer or cooler end, according to their respective requirements.—James O'Brien.

Roses.

Those who wish to plant Roses, or add new varieties to their collections should lose no time in selecting the kinds which they require. Autumn-flowering Roses, though on the whole good, have in some cases been injured by the heavy rains which we have had. In planting, use some good loam and rotten manure that have been turned over two or three times and thoroughly mixed, and also add one-fourth of road grit. See to Briers that have been budded this summer, loosen the ties if too tight, remove all suckers, shorten back any very strong growths that occur in trained Roses, so as to keep them symmetrical, and tie up growths from this season's buds so as to save them from being damaged by wind.—H. G.

Richmond Park.—The tangled brakes, plenteous Ferns, flower dells, tastefully-bestowed shrubs, and trees great and small in this park are an untold boon to the city-pent thousands of the metropolis, and an attraction to visitors from every clime. By the sides of irregular groups of time-worn giants of the forest, carrying us back to those very early times indicated by the mention, in the reign of Henry VIII., of certain portions as "the new park," there stand vigorous plantations of maturing and matured trees that prove the fostering care of more recent guardians. It is possible, taking care that the keeper's eye is not upon us, to wander away in absolute solitude, where the thick underwood conceals hare, rabbit, and pheasant, and where the graceful hind and fawn repose in undisturbed confidence; rare and luxuriant Ferns and Mosses are their carpet, interlaced branches, spreading above, their roof. Ivy and Lichens conceal the deep wrinkles of age upon the knotted pillars which uphold the latter; and in its season the foliage is sufficiently dense to provide unbroken shade. Happily, the public pathways which intersect Richmond Park seem to have been specially designed to show off its wooded portions to the best advantage.—"Picturesque Europe."

TREES AND SHRUBS.

ORNAMENTAL HARDY TREES AND SHRUBS.

New Purple-leaved Birch.—This is an acquisition of unquestionable value. The list of deep dark-coloured-leaved trees is very limited. The Purple Beech, the Black-leaved Oak, the Red-leaved forms of Acer colchicum and A. platanoides, are the chief of such at present available among deciduous trees for the production of deep-toned effects in ornamental planting; while among evergreens, the number, variety, and excellence are even less considerable. Any such addition as the subject of this notice, therefore, to this important class of hardy trees is to be welcomed with pleasure. The only familiar tree that can compare with this Birch in colour is the Purple Beech; but when the characteristic elegance of the former is joined to the fine, deep-contrasting, purplish-black leaves of the latter, there can be but one opinion as to the value of the plant and its high capabilities in the hands of planters of good taste. The particular form of Birch thus so valuably coloured is that known as the Poplar-leaved, of which the sort named laciniata is a tolerably well-known variety. A very free, vigorous, yet elegant growth is characteristic of this form of Birch, and the purple-leaved variety is in all respects, except the colour of the leaves, the same as the green-leaved type. It is a vigorous-growing, freely-branching tree, and as graceful as the cut-leaved sort, only the leaves are entire and large, and in form resemble those of the Lombardy Poplar in miniature. A very weak plant turned out of a pot twelve months ago is now 6 ft. high; and others in 5-in. pots worked last year, but having twigs only about 3 in. in length in autumn, are now showing growth 18 in. and 2 ft. in length, so that no doubt need be entertained as to its growth being abundantly vigorous. It will have a most charming effect as a lawn tree, or when grouped tastefully with contrasting trees in the ornamental plantations. The plant is yet scarce, but will not likely be so long, as the demand for it is sure to be great when it becomes better known, and a brisk demand is all that is needed to insure an abundant supply.

The Golden-leaved Elder.—Comparing great things with small, there is perhaps no better illustration of the effect of the fine deep-golden hue of this Elder than that produced by the popular Pyrethrum Golden Feather. It is in fact the best of the golden-leaved hardy deciduous trees in cultivation, and maintains its fine glowing tint undiminished from the beginning to the end of the season. Nor is it liable to be burned by excessive sunshine—it rather improves in brightness under it; while a succession of wet or dull days leaves it as effective as ever. There are several other hardy golden-leaved trees that, though bright and glowing while the first flush of growth is on them in spring, are liable to be scorched under a bright midsummer sun, or to have the colour washed out of them by long-continued wet weather in summer or autumn. This is particularly the case with the Golden Oak and the Golden Alder, both of which are poor growers as compared with the present subject. Of course it is a plant of limited growth comparatively, considered as a tree; but its value notwithstanding is greater in an ornamental sense. In the front ranks of ornamental plantations, or in the background of shrubbery of some breadth, it may with judicious taste be made to play an important and very effective part. It is quite possible, in conjunction with the Purple Birch and Beech, and other dark-coloured trees, such as are to be found among the different Acers, and with such silvery-leaved sorts as Acer Negundo variegatum, the variegated Sycamore, &c., to produce colour effects of the most pleasing kind, enhanced by the massiveness and permanence of the character of such combinations, beyond anything of a like kind that can be produced by bedding plants.

Cerasus Mahaleb variegata.—This is a charming hardy plant of comparatively free growth. The leaves are small but numerous, and the shoots elegant and twiggy in habit. The variegation is a clear silvery one, chiefly confined to the margins of the leaves, but affecting the whole of the foliage by imparting a bright glaucous tint to both the upper and under sides. It forms a beautiful object when grown as a standard, and no less so when in pyramids; but the plant is so tractable that it may be trained in any form whatever, even to the covering of a wall or trellis.

Cornus Mas. variegata.—One of the most beautiful of the silvery variegated hardy shrubs, which should be freely employed in every ornamental arrangement of this class of plants. It is a free grower, and has the leaves deeply margined with creamy-white, and splashed and striped with the same. It is a fine object, either as a standard pyramid or rounded bush, and might be employed in various ways in the flower garden as a standard or pyramid centre-piece to large beds, or as relieving objects in long lines or borders. In spring, before the leaves appear, the plant becomes covered with innumerable small yellow flowers in clusters, and is then even a pretty and interesting object.

Ligustrum ovalifolium variegatum.—This it a most valuable addition to the hardy variegated class of shrubs. It is evergreen and perfectly hardy, and is of such an excellent adaptable habit that it may be employed in a variety of ways for ornamental purposes. It is a free-growing shrub of symmetrical habit, and may be easily trained into any form. It is beautiful whichever way it is grown. As a standard particularly, it is very striking and attractive, and in this style it will be found very useful in the flower garden. The foliage is roundish-oval and the colour bright yellow, covering the greater part of the leaf from the margin inwards.

L. japonicum argenteum marginatum.—This is a Privet of another type altogether from the foregoing. It is more upright in growth. The foliage is broadly lanceolate, and deeply margined with silvery white. It may be worked on stems as a standard also, and may be used in the ways suggested by remarks on the foregoing variety. It is a very handsome and effective shrub.

L. japonicum tricolor.—This is the same in all respects as the last described sort, with the additional charm of being margined with red, which, when well exposed to the sun, becomes very bright, and forms a pleasing contrast to the silvery colour of the inner portions of the leaf.

Skimmia japonica variegata.—There have been so-called variegated Skimmias before, which have been introduced only to be neglected and forgotten as they deserved to be, being merely sickly plants, without constitution or claims to beauty of any sort. This will, I venture to say, have no such fate as its predecessors. It is both constitutionally vigorous and very handsome. I am not aware whether the fruit partakes of the decided and distinct silver and pure white variegation which so effectually colours the leaves and young growth, the branches being in some instances pure white streaked with silver and deep olive green, but it is to be hoped that for the sake of contrast the fruit will retain the original deep red colour that is natural to it. If so, the plant will become very valuable for indoor decoration in winter.—"The Gardener."

The end of the old Locust Trees.—A half century or more ago cultivators on Long Island, in New Jersey, and some of the adjacent regions of country, paid considerable attention to the planting of Locust trees. The demand for Locust timber at the time named was brisk, and good prices were obtained for it, large quantities being used in the construction of vessels. Many growers on Long Island and in New Jersey, scattered Locust seed in their woodlands, and as the young seedlings grew up the other kinds of timber were removed in order to give the Locust room to grow. Some of these old Locust forests still remain, but the timber is in less demand than formerly, and it is well that it is so, for the supply has rapidly diminished of late years through the depredations of insects. Some of the main roads in my own neighbourhood as well as in other parts of New Jersey are bordered with rows of Locust trees planted from fifty to seventy-five years ago. But these old trees have long since ceased to be either useful or ornamental, and of late many of them have become decidedly dangerous, for their worm-eaten branches are broken off and scattered along the highways, putting the lives of those who may be obliged to pass along the road in peril. A large number of those old Locust trees in my neighbourhood have been cut down recently, and I have examined these fallen monarchs with considerable interest. The well-known Locust tree borer or Painted Clytus (C. pictus) is the larva of a handsome beetle nearly an inch long. It is of a black colour, beautifully ornamented with golden-coloured spots, bands, and stripes. These beetles appear in September, the female depositing her eggs in the crevices of the bark on Locust trees, where they hatch, and the grubs or borer soon penetrate the sap-wood, passing their various transformations, and appearing again as beetles in the following autumn. Now, in examining the several stems of these old trees lately cut down I find no marks of insect depredations on the lower part, the first 10 ft. or more being sound and generally free from scars; but above this the burrows of the borer begin to appear and increase very rapidly until the growth during the last dozen or twenty years is completely honey-combed by these pests. From my slight examinations of these trees, I conclude that the Locust borer was not very abundant in this neighbourhood forty or fifty years ago, but as no efforts were ever made to prevent its ravages, the increase in numbers has been quite rapid. Every sapling and sprout an inch or two in diameter is certain to be attacked by this insect, consequently no one hereabout would think of planting the Locust tree for any purpose whatever. The fate of the Locust tree in my neighbourhood will probably be its fate everywhere, as its great enemy, the Painted Clytus, is pretty well distributed over the country.—A. S. Fuller.

GARRYA ELLIPTICA IN FRUIT.

Garrya elliptica is one of the most attractive of all ornamental-flowering evergreen shrubs, and, although introduced to this country as long ago as 1828, it never seems to have become so popular as its value as a winter and spring decorative plant would appear to warrant. It grows from 6 ft. to 10 ft. high, and has a rather dense and spreading head, furnished with numerous slender shoots, which are downy when young, but quite smooth when fully matured. It is a native of North-west America and California, where it was discovered by Douglas. It is easily increased either by layers or by means of cuttings of the half-ripened shoots, and grows freely in any good garden soil. The leaves are opposite, somewhat oblong or elliptic, with a small acute point, rather wavy when young, thick and leathery in texture, set on short footstalks, persistent, of a dark shining green above and hoary beneath. The flowers, which are unisexual and on distinct plants, are arranged in pendulous catkin-like racemes, with connate bracts, and are produced from December to March. The male flowers form

Fig. 1.—Male Catkins of Garrya elliptica.

very long, slender, pendulous catkins (fig. 1) from 6 in. to 10 in. long, and are of a greenish-white or yellowish colour, while the female ones are produced in comparatively short catkins not more than 3 in. or 4 in. in length, and are deficient in graceful appearance compared with that of the male ones. The fruit, which is produced in compact bunches, is a berried pericarp containing two hard bony seeds, as large as a moderate-sized Black Currant, and of nearly the same colour when ripe. All the plants of this Garrya originally raised from Douglas's seeds proved to be males, and it was not until Hartweg, in 1848, sent two female plants to us from California in a Wardian case, that that form was known in a living state in Europe. The

Fig. 2.—Fruit-bearing catkin of Garrya elliptica.

female plants first flowered and fruited in 1850, and from their seeds plants of both sexes were afterwards raised. Female plants are, however, still rare, but quite recently Mr. Finzell, of Cliveden, near Bristol, has sent us fruit-bearing branches, of which fig. 2 is an illustration. The fruits are downy, like young Peaches, and each contains two seeds in a purple-coloured pulp. M. Thuret, of Antibes, raised a very interesting hybrid between G. elliptica and G. Faydeniana, the latter being the female parent. B.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Tree Growth in Dry and in Wet Seasons.—The Prince of Wales's Oak in the Bath Victoria Park now measures 3 ft. in circumference, having grown 1 in. only in the past year (a dry season), against 5½ in. last year (a wet season).

A Double Lilac.—M. Lemoine, of Nancy, has raised a double Lilac—Syringa hyacinthiflora flore-pleno. The name hyacinthiflora was given on account of the resemblance of the flowers to those of a Hyacinth in miniature. These are at first red, with a slender tube, as in S. oblata, and borne in large somewhat loose panicles. This will probably prove a valuable shrub.

Irish Yews in Scotland.—At Netherplace, near Mauchline, there are, according to "The Gardener," two enormous Irish Yews growing in the kitchen garden. The largest is 33 ft. in spread of branches, and its height is 29 ft. 8 in. Its companion is 32 ft. 6 in. in spread of branches, and 30 ft. in height. They are dense and in perfect health, being of a rich dark green. These two trees stand within a stone's-throw of Burns' cottage.

Desfontainea spinosa in South Wales.—A fine bush of this lovely shrub is now adorned with its bright bells in the gardens at Singleton Abbey. It is over 7 ft. high, and as much through, but rather thin in habit, probably from being grown in a much overshadowed spot. This shrub is so unrivalled in its way that one is surprised to see so few attempts to grow it in the districts where it has been proved to thrive. A note from any correspondent who has observed the conditions under which it thrives best would probably be useful.—V.

Eucalyptus eugenioides.—According to M. Cordier, of the Maison Carrée, Algeria, the beautiful Eucalyptus eugenioides is one of the fastest-growing species of this remarkable genus. Plants of it 4 in. high, put out in June, 1873, are now upwards of 26 ft. high, and the stems are about 1 ft. in circumference 3 ft. above the ground.—*Tribune.*

HOME-MADE ASPHALTE WALKS.

For kitchen gardens, or courts, or anywhere where a clean, smooth, durable path is an object, there is hardly anything better than asphalte when properly laid down. Weeds never grow upon it, which is a vast consideration in a kitchen garden; and every shower of rain washes it as clean as a well-swept kitchen floor; it has no offensive smell after it has been down for a few weeks; and it will last under the usual garden traffic for twenty or thirty years. We are well acquainted with kitchen gardens where all the walks are asphalted; they have been laid down for many years, and are as smooth and even at this day as they were at the beginning. Some of the shady walks amongst the shrubberies, where weeds used to grow too fast, are also done in this way, and have long ago become covered with a fine green Moss, on which one treads as silently as on a carpet, but no weeds grow on them. We are not here speaking of asphalte put down by regular asphalters, but of work done by the ordinary labourers on the estate, at very little expense and trouble, and we are prepared to state that the walks look just as well as those put down by the asphalters, and are, if anything, more lasting. The regular tradesman, who does the work by contract at from 8d. to 1s. per square yard perhaps—finding all the materials—puts on too thin a layer, and the consequence is that the frost breaks it up, rends it in every direction; and then it has to be done over again, for asphalte does not patch well. We have put down in our time many hundreds of yards of asphalte with our own men, and it cost us little more than the gas tar, which can sometimes be had from the nearest gasometer for a trifle, and a few barrels will soak a great quantity of ashes. Usually a good deal of trouble is incurred in draining and bottoming the walks and in putting the asphalte on at twice; but all this work and the boiling of the tar we have proved to be quite unnecessary, for our purpose at least. With two or three good labourers the ashes are sifted, soaked, put on, rolled, and finished in a very short time. As to drainage, it must be remembered that the water runs off the walks, and does not drain away; all that is necessary is a single drain along one side of the walk, into which the water is taken by gratings at convenient places. No rubble bottom whatever is put in. If the soil be tolerably hard and solid, the asphalte is just put on it as it is, save the cutting and making of the edges, and a walk so made is just as good as one with 1 ft. of broken stones beneath it. The best season for the work is in autumn, about this time, when the heat of summer is over and the frosts have not set in, or in spring after the frost has gone and before the heat comes on. The reason of this is, that in hot weather the asphalte does not set so readily, and in frosty weather it is apt to be disturbed and broken up before it does set. And now as to the *modus operandi*. First of all, the walks must be set out and got in readiness, and then the ashes—usually plentiful about a garden—must be sifted. Two men will sift as many in two days as will cover a great stretch of ground. A 1-in. sieve or screen must be used. If the ashes be put through a wider mesh than this, they are too lumpy, and do not bind well; and if through a less, they contain too much small, and the "cake" is too soft and yielding. They should be thrown into a circular flat heap about 2 ft. deep when sifted, and the tar should be got and emptied over them at once—about as much as will soak them the first time without draining away to waste, which is a matter of judgment at the time. It is better to give too much, however, than too little, as what tar runs through can be ladled up and poured on again until the ashes absorb it all, which they take a little time to do. As soon as the tar has been emptied on, however, the heap must be turned at once, and turned again, mixing the wet with the dry ashes as the work proceeds, so as to soak up the tar as much as possible; and when finished the heaps should be thrown into a conical shape, and left to soak for about a week, when the ashes will appear much drier than they were when turned, in consequence of the tar soaking into the cinders more completely. This is the reason of applying the tar twice. If the whole be put on at one time, the half of it will run off, and after the ashes have been put on the walk they will dry and break up like a macadamized road in dry weather. The first dose of tar saturates the cinders, and the second makes them sticky. At the end of a week the second dose must be given, the heap turned as before, and again left for several days. The drainings may be poured back on the heap again, but if the tar persist in draining through, it is better to let it run away or use it on another heap, for the ashes must not be puddly or dripping with the tar, but, as we have said before, sticky only and no more, otherwise the walk will not set so hard. When it is seen that the material is in this condition, wheel it off on to the walk and spread it about 4 in. deep, and level it as it is put on with the back of a rake, leaving an even surface, and taking care that the walk is slightly rounded towards the centre, in order to throw the water off to the sides. As soon as all has been put on, roll it with a wet roller two or three times, and keep the roller clean with a besom as it goes along. The usual way is for two men to pull the roller and one to go behind with a besom, all taking care how they put their feet down. After this sprinkle the surface with gravel or spar put through ½-in. sieve so thickly as just to hide the asphalte, and roll again for three or four hours till it is quite firm, and continue the rolling for an hour or two every morning when it is cool, for three or four days. If the work have been done with ordinary care, the walk is fit for traffic as soon as it is finished, and is perfectly clean to the feet. If the gravel have been put on thick enough, it makes a clean, dry surface at once, and keeps its colour perfectly. Should more be sprinkled on than will roll in to stick, it can be easily swept off afterwards when the asphalte has fairly set. A walk finished in this way—and it must be sprinkled with something—has just the appearance of a gravel walk smoothly rolled. As regards edgings for asphalte walks, we are aware that the belief exists that Box and other living edgings will not grow near gas-tar; but this is not the case. We could point to gardens where hundreds of yards of Box are growing close to the asphalte, and all other kinds of edgings thrive well enough. It is only necessary to plant the edgings after the asphalte has been put down and is set, and this is not a difficult matter, as the asphalte can be put down and rolled with the utmost exactness, and the edgings can be planted close up to it.—"Field."

NEW PLANTS, &c.

Narcissus muticus.—A very curious and ornamental Daffodil from the Pyrenees, which flowered with Mr. Barr and Mr. Ware during the spring of 1876. It is undoubtedly a variety of N. Pseudo-Narcissus, although a very distinct one. The perianth segments are widely expanded, something like those of N. incomparabilis in shape, while the cylindrical crown varies from 1½ in. to 2 in. in length, and is of a clear yellow colour. The leaves vary from a glaucous hue to a bright green tint.—"Floral Magazine," t. 224.

Funkia Sieboldiana var. Fortunei.—A strong-growing form of a well-known, noble-habited type, often met with in good gardens. This variety has smaller and more rigid leaves than the type, and they are of a much more bluish or glaucous tint; the flowers are pure white. We have seen this plant growing in Mr. Barr's grounds, at Tooting, beside the typical F. Sieboldiana, and it is quite distinct, and well worth culture as a hardy fine-foliaged plant.—"Gartenflora," t. 867.

Hibiscus insignis.—A shrubby kind, resembling some species of Cotton plant (Gossypium) in foliage and habit. The bright green leaves are distinctly three-lobed and coarsely serrate. The flowers are fully 3 in. in diameter, of a yellow or buff tint, having a zone of reddish-crimson in the centre. It is a Brazilian plant, and may be worth a place in botanic collections, but it is not likely to become a popular decorative plant.—"Gartenflora," t. 868.

Anthurium crystallinum.—A strong-growing Aroid, with dark velvet-like, silvery veined leaves fully 2 ft. in length by 1½ ft. in breadth, each leaf being borne on a slender cylindrical petiole 2 ft. to 3 ft. in length. When well grown in a stove temperature it forms a handsome foliaged plant, and well deserves culture as one of the best of the A. regale or A. magnificum type.—"Gartenflora," t. 873.

Erythronium grandiflorum.—This is a dwarf-growing Dog's-tooth Violet, bearing golden-yellow flowers with reddish-purple anthers. It is rather rare in our gardens, but appears to be nearly related to E. Nuttallianum, E. americanum, and E. giganteum, all of which agree in being natives of North America, and in bearing yellow flowers. They do not grow and flower quite so freely as the E. Dens-canis group, but are nevertheless well worth culture in warm, rich soils.—"Gartenflora," t. 873.

Corydalis cava var. albiflora.—This is a pallid variety of a well-known and long-cultivated type, which it resembles in every particular, except in having nearly white flowers. It well deserves culture as a free-growing, hardy plant.—"Gartenflora," t. 874.

Leucojum vernum.—Another old inhabitant of our gardens, well known as one of the earliest harbingers of spring, hence its popular name of Spring Snowflake.—"Gartenflora," t. 874.

Macrozamia Paulo Gulielmi, M. tridentata, and M. tridentata var. oblongifolia.—We have here three distinct forms of the Australian Cycads, now becoming popular as warm greenhouse foliage plants in our gardens. They have slender, pinnate leaves, the first-named species having curiously twisted petioles. By what we have seen of the cultivated plants it is impossible to attempt to name them, except from fruiting specimens, so that names given otherwise either for botanical or horticultural purposes can only be provisional ones. The species are diœcious, and the male and female forms of the same plant are frequently in gardens named as belonging to different species.—"Gartenflora," t. 875.

THE FRUIT GARDEN.

FORCING FIGS.

Figs require more heat to start them into growth than almost any other fruit forced in British gardens. Fortunately, too, even an excess of heat is less hurtful to the Fig in its early stages than it would prove to the Peach or Grape Vine. It is of little use attempting to start Figs with a lower night temperature than 55°, and a day one of 65°; hence it follows that Figs on the back walls of Vineries seldom break into leaf until the Vines are perhaps showing fruit, and that is one reason why Figs should not be grown in such positions. The Vine gets so far advanced as seriously to shade the Fig before the latter gets fairly into growth. The best place to grow Figs for forcing is on the roof of a lean-to or span-roofed house, within 1 ft. or 18 in. of the glass. They are also sometimes grown very successfully on back walls, the houses being so narrow as to form a sort of glass screen in front of them. In whatever sort of house the Fig is forced, it is important that it should be light, and be fully heated, and that the trees should be so managed and trained as to get the full benefit of the direct rays of the sun. On well-ripened wood the fruit will be in advance of the leaves. It may be very much so if the smaller fruit of the previous season winters well on the trees and begins to swell kindly. Even should there be no such fruits, or they drop off, the young Figs springing out of the buds of the well-ripened wood will often be considerably ahead of the foliage. As soon as these fruits get a fair start, a rise of 10° may be made in the temperature—that is, an advance to 65° at night, and to 75° or 80° during the day, and these temperatures may be maintained throughout the season. Fig forcing differs from that of most other fruits in the fact that while with Vines, Peaches, Apricots, Plums, &c., we are content to ripen one crop of fruit in the year, Fig forcers mostly aim at two or three. Starting in January, for instance, there is no insuperable difficulty in having a third crop in November, and getting the trees in time for a fresh start again the following January; hence the importance of liberal culture and treatment, and a high temperature. If we are to carry two or three crops abreast, or ripen them on the heels of each other, there is but little time to spare. The Fig, too, throughout the whole period of growth, delights in a moist atmosphere. Its large leaves perspire freely, and unless that be somewhat checked by a humid medium, the leaf is apt to become emptied of its proper juices and strength, and become the prey of red spider, thrips, and occasionally scale. The only sure remedies for these are prevention by skilful culture and a moist atmosphere. The roots while growing are also fond of water.

Culture and Varieties.

The bottom of the border for Figs should be well drained, the material of it porous and poor. Two parts of light loam and one of old mortar-rubbish or broken brick-bats—for I believe the mechanical effect of the rubbish is of far more importance than its calcareous character—form a good root-run for Figs. When the soil is exceptionally rich, half loam and half hard matters will suffice. A great point in the successful forcing of the Fig is to avoid growing an excess of wood. It is easy to add strength to the trees when they need it by watering with manure-water. Moderate root-pruning is also useful, but if any extra strong roots be cut away at planting time, it is comparatively seldom that more root-pruning is needed. Summer pinching and stopping of the shoots are the best means of regulating the strength of the trees, as well as of obtaining successional crops of fruit. As soon as the shoots have formed three leaves, their points should be pinched out. This helps the first crop to swell faster by throwing part, at least, of the energies of the tree back into it, and it also hastens the forming and swelling of the second crop, which speedily shows in the axils of the young leaves of the current year's wood. As soon as the shoots make three or four leaves they should be stopped again, and this leads to a show of the third crop. After this there should be no more stopping; the further treatment consists in the removal of small or useless shoots to avoid overcrowding, and the nurturing of the fruit and leaves already formed and more or less fully developed. Of course it is obvious that the more of those small fruit-bearing shoots room can be found for the better, and the more fruit is likely to be produced. This has led to what may be termed a free system of spray or spur growing, which is perhaps the most profitable mode of training Figs for forcing or otherwise. Under this system there is little or no winter pruning, but a system of stopping at every fourth or fifth leaf is practised throughout the summer. Running parallel with this is a system of summer pruning, which at once exorcises every barren and worthless branch. As each crop approaches maturity a much drier regimen must be practised for a time, otherwise the Figs are apt to rot instead of ripen into perfect luscious sweetness. It is also needful to give abundance of air, and to avoid anything like a stuffy or stagnant atmosphere. It is not necessary, however, to withhold water long from the roots. The result of this would probably be the loss of the second crop while attempting to perfect the first. For Figs are not completely perfect unless they partly split and open themselves. In that state, and when the rinds also burst into irregular rents, no fruit can exceed the Fig in refreshing sweetness, and every nourishing and satisfying quality. It is easier to force the Fig in pots than when planted out, and chiefly for this reason:—In pots it can be subjected to any amount of bottom-heat. This stimulates it rapidly into growth, and hastens the swelling and ripening of the fruits. It is a common method when forcing Figs in pots (using only 10-in. or 12-in. ones), to plunge them in a bed of spent tan or leaves, of a temperature of from 70° to 75°, and to allow the Figs to root over the top and through the bottom into the fermenting mass. In this compound the apparently opposite advantages of root-pruning, or cramping and liberal feeding are both realized, and the result is often two or three crops from the same trees within nine months. Figs in pots can also be very well grown by confining their roots to the pots in the ordinary way, either with or without bottom-heat. The same general treatment with regard to watering, syringing, stopping, &c., is applicable to those planted out. As to varieties, Lee's Perpetual, or the Brown Turkey, is really the best Fig in cultivation. It bears well in or out of pots, forced or out-of-doors in favourable localities, and is a brownish-purple fruit of good size and the highest quality. Early Violet is a smaller Fig of similar character, and an excellent variety for early forcing, especially for pot-culture. Black, Brown, and White Ischia are also good Figs of excellent quality. White Marseilles is a queen among white Figs, and a capital companion to the Brown Turkey; the white Bourjassotte is another fine, rich Fig. Grosse Verte is a large pale green kind of high quality, but not so early as those of the above. Black Provence is another very rich Fig of high flavour. There are many other varieties, but it is of little use attempting a list, for I should consider it no hardship were I solely confined to the Brown Turkey and the White Marseilles.

Propagation.

The Fig is also unlike most other fruit trees as regards the facility with which it may be propagated; this is by means of cuttings, suckers, layers, or eyes. So readily is the Fig propagated that almost if a pendent branch touch the earth, it is sure to root. The best mode, on the whole, is by cuttings, and these root so readily and grow into plants so rapidly under genial treatment, that no other or better mode of propagation is needful. Terminal shoots, from 6 in. to 12 in. in height, of the previous year's wood make the best cuttings. Those of medium strength root the quickest and form the best plants. Each cutting should have a thin heel of older wood attached to it. As the Fig forms strong roots which are easily broken, it is better to insert each cutting in a separate pot. Any sandy soil does well to root them in. A mixture of equal parts of leaf-mould, loam, and sand, has been found to answer well. Place each cutting firmly in the soil, water it well, and when plunged keep the pots in a bottom-heat of 70° until rooted. The surface temperature should not exceed 50°, the object being to induce the cutting by the excess of heat at its base to grow underground rather than above it. As the top buds break into leaf, shading and a moist atmosphere will be useful. Were the top temperature as high as the bottom-heat, the cuttings would probably never become plants. The young leaves would expend all vital force, and leave little or none to form a callous root. When the pots are quite full of roots, shift into a larger-sized pot, and grow the plants either with or without bottom-heat. As soon as the central shoot has reached a height of 1½ ft. or 2 ft., it should be stopped. This stopping will cause it to break and form the future head of the tree. From this point the training of the future tree may be said to start. If for a roof-trellis the horizontal form is mostly adopted; if for a wall, the fan, after the manner of Peach trees; if for pots, either that of a low bush or clean-stemmed standard, somewhat in the way of a standard Rose. Either way, by liberal treatment and a moist atmosphere throughout the summer, the cutting put in in January or February of the one year may be grown into good material for planting out, or even forcing in pots, the next season—so rapid is the growth of the Fig and so fertile is it under skilful cultivation. Two years from the cutting forms, of course, still better material, and either way, by sticking in a few cuttings annually, the Fig grower or forcer is never likely to be short of good trees, either for planting or forcing in pots.

D. T. Fish.

Cherries on North Aspects.—Bigarreaus, and the Black and other Hearts have been proved to be useless here on north aspects. They do not ripen their wood, and they grow badly, and bear no fruit; they have, therefore, been dug up, and Dukes put in their places.—J. Taylor, *Hardwicke Grange, Shrewsbury.*

GRAFTING VINES—PUTTING ON GRAPES.

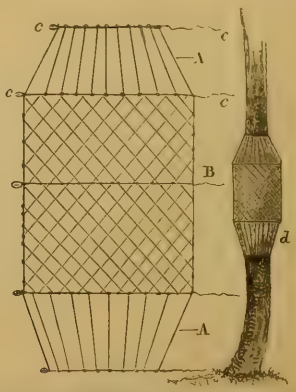
Having had considerable difficulty in obtaining fruit from a large and luxuriant Black Hamburgh Vine, I carried out a suggestion which was made some time ago, and I have succeeded in placing on my hitherto fruitless Vine some satisfactory bunches of Grapes. "Placing on" the bunches is a somewhat unusual term to use in reference to Vine culture, but it is literally true, for the Vine of itself showed no bunches of fruit, yet by artificial aid became the foster parent of an excellent crop, which, in embryo, was placed on it during the spring of the same year. The Vine was an old one, but apparently in robust health, for it grew vigorously, producing long-jointed wood, large leaves, long tendrils, but no fruit. It was pruned on the short-spur system, and everything that was possible was done to ripen the wood, but no fruit followed. The long-spur or extension system was then tried, and a few bunches were obtained from the young canes, but by no means a good crop. I then had recourse to the plan of "putting on" the bunches. Short-jointed and well-matured wood from fruitful Vines was preserved by burying it 1 in. deep in the open garden. In the spring when the barren Vine commenced putting forth leaves the dormant yet fresh pieces were dug up and grafted on the old and then freely-growing stock. The grafts were for a time supported with "the bottle"—that is, until their union was complete and they received support from the stock. The grafts were 18 in. long, and from the centre of each a deep slice was cut 6 in. in length, starting at two eyes from the top. Corresponding slices were cut from the parent, some on the old rod and others on the laterals, which had been purposely left unpruned, and the cut parts were neatly placed together, and were secured by matting and protected with Moss. The lower ends of the grafts, which were about 8 in. in length, were inserted in bottles of water—common wine bottles—which were suspended from the roof. These bottles were kept filled with water for a considerable time. In due time the buds swelled and the young growth grew just as freely as if it had been a part of the Vine. Bunches were seen, and each shoot from the graft was stopped a leaf or two beyond the bunch. The growth of the "stock" Vine was also restricted, and during the same season good bunches of really fine Grapes were ripened on that Vine that had previously been barren for years. Another noteworthy fact remains to be told. The short-joined fruitful wood that was "put on" the Vine producing long-jointed unfruitful canes has in a measure retained its short-jointed and fruitful character, and for three years has produced satisfactory crops of Grapes, yet not quite equal to the crop which was produced during the season of grafting. The operation is so easily performed that no one need hesitate to try it. A sharp knife, a steady hand, and a quick eye are the principal requisites in "effecting a junction," and subsequent attention to stopping the growths—on stock and graft—"keeping the bottles filled," and thinning the fruit will result in Grapes which have been "put on" the same season. I only regret that I did not try several varieties on the same Vine, for apart from the interest attached to their so growing, it would have been instructive to have noted what effects, if any, the stock had over the grafts. A vigorous parent is no doubt necessary to insure success.—"Journal of Horticulture."

The Phylloxera in Madeira.—According to a letter from Dr. Grabham, an English physician residing in Funchal, which appeared in the "Times" of the 25th ult., the Phylloxera is committing sad havoc amongst the Madeira Vines. Dr. Grabham states that the growers who re-planted their Vineyards after their former destruction by blight, have enjoyed but a brief time of prosperity, for the Phylloxera is spreading general and utter destruction. In the best situations peasants are already burning in heaps the trellis-work of their lately beautiful cultivation, and in less valuable districts the devastating process is only one stage less advanced. Around Funchal there is not one Vineyard in vigorous condition, and it is clear that no considerable crop of good wine may be looked for. In the "Times" of the 26th ult., Messrs. Cossart, Gordon & Co., Madeira wine importers of long standing, gave a much more hopeful view of the affair. They state that although the Phylloxera has done some mischief to the Vines this year, they are informed by their house in Funchal, writing on September 15, that the quality of this year's vintage is excellent, so far as can be judged by the saccharometer, and that the quantity will be very large in proportion to the shipments, although less than last year's produce. This year's vintage is estimated at 10,000 pipes, being within a fraction of the exact average of the last seven years. The Phylloxera seems not only to destroy the Vine, but like the Laurel branch on board the good ship Argo, it seems also to give rise to interminable disputes amongst those who speak or write about it.

APPLE WORM, OR CODLIN GRUB.

(CARPOCAMPA POMONELLA.)

With reference to the article (see p. 248) on the extermination of this grub, it occurred to me that by combining the remedy of the hay rope bound to each tree, and the trap invented by Mr. Wier, recommended by Professor Riley, the State Entomologist of Missouri, more practical results might possibly be obtained. My idea is that a simple, inexpensive, and easily managed trap could be made by taking a piece of ordinary wire-netting of varying depth, and of sufficient breadth to girdle a tree loosely, so as to admit of a proper quantity of straw, Gorse, or other suitable material, being packed between it and the bark of the tree, in which the cocoons could be spun. It must be made to admit of a wire being run through the top and bottom, and perhaps through the centre, by which it could be hitched firmly on to the tree by a twist or two, and be as easily detached. An ordinary piece of flat wire-netting would answer, but, to make it act perfectly, it should be specially cut so as to allow the centre part to contain more material than the top and bottom, as shown in the accompanying sketch. If



(A A) Adjustable wires to fit the trunk of the tree. (B) Wire netting to admit the stuffing. (c c) Loops and wires to attach it firmly to tree.

such traps were attached to each tree in an orchard at the proper season, they could be examined periodically by any ordinary labourer. All he would have to do would be to carefully collect, in a barrow or hand-cart, the old stuffing from each cage, for the purpose of burning it thoroughly, and utilising the ashes on the manure or compost heap. The bark of the tree against which the cage rested should at the same time be thoroughly cleansed, as well as the cage itself, which should then be re-filled with fresh material, to be similarly treated on the occasion of the next periodical visit. The cage could, of course, be very easily made of twine-netting, tarred or otherwise, but the wire cage would be more durable. The wire cage could be made with two walls to enclose the stuffing, which would simplify its attachment to the tree, as the adjustable wires to fit the tree would not then be required.

J. P.

Low Night Temperature for Vines.—It may seem superfluous to return to this subject, but I merely do so to record a little further experience relating to our Muscat-house, which is annually allowed to drop as low as 50° at night till the berries are all set, and with beneficial results, as already recorded. We certainly do not risk a lower temperature than 50° with any of our Vines, as that would be needless; but I have on a former occasion stated that I thought Vines would stand a considerably lower temperature than that when in flower, without any bad effects, and this season that opinion has been confirmed. Our second Early Hamburgh-house fell frequently to below 50° when the Vines were in flower in March, and on one occasion the thermometer near the warm end of the Vinery indicated 45°, and would probably be 2° or 3° lower at the cooler end. When this

happened, the bunches were set at the warm end, and the berries as large as small Peas, and at the cool end they were just in flower. I may state that the experiment was not made purposely, but the boiler was heavily taxed during a long spell of severe weather, and it was as much as it could do to keep the temperature up to the above figure. However, the Vines suffered not the slightest injury, but set and swelled off a heavy crop of well-coloured fruit, which was all cut in June and July; and at present, although the wood has been hard and ripe for more than three months, the first leaves are still green and healthy. I calculate that our outlay for coals for keeping up the night temperature of our Vineries is about three times less than it would be if we went in for the high temperatures, such as are yet frequently recommended. Privately and otherwise, I have heard very satisfactory accounts from those who have adopted the low temperature system; but further records through your pages would no doubt be useful.—J. Simpson, *Wortley*.

GRAPES IN UNHEATED VINERIES.

I lately saw in one of the Midland counties, in an unheated Vinery, a crop of Grapes, which, as regards size both of bunch and berry, and also colour, fully equalled fruit of the same kind grown under more favourable circumstances. The Vinery in question was no elaborate or costly structure; on the contrary, it was plain but substantial, similar to what any ordinary carpenter could readily erect. In shape it is what is termed a lean-to, 9 ft. wide, 14 ft. high at the back, and 3 ft. high in front. As will be seen, it therefore had a somewhat steep pitch, which was found to be advantageous in two ways—it threw the wet off quickly and distributed the light more evenly over the back wall than if the roof had been of a flatter description. The latter was all in one piece, that is, it did not consist of sashes and rafters. The astragals had each been cut out the length required; they were 2½ in. deep and 2 in. wide, and rabbeted on the upper side in the usual way to carry the glass, their ends being dovetailed into the front plate, and into the headpiece fixed in the back wall. The glass was 21 oz. British sheet, in squares about 18 in. long and 10 in. wide; the front was framed and glazed in a similar manner, and at every 8 ft. apart both at back and front there were openings for ventilation, fitted with small lights 3 ft. by 2½ ft. Those at the back were hinged to the head-plate, and those at the front were hung in the usual way, both being moved from the inside by means of small iron levers, and these sashes were not opposite one another, but alternate. Along the centre of the roof inside was a tie rod made of flat bar iron 1 in. by ¼ in. This was connected by a screw to each astragal, and supported at every 8 ft. by 1-in.-round iron uprights let into a large stone just under the surface of the border. The pathway ran along the back, and there was a door at each end. The back wall was flued, but heat was never given, except late in the season to dry up damp. Wires about 6 in. apart were stretched along the back wall, on which the Vines were trained. In this house, which was 90 ft. long, there were three Vines, viz, two Black Hamburghs and one Royal Muscadine. These stood at equal distances apart along the back wall, and from each Vine shoots were led right and left along the bottom of the wall. From these upright bearing-rods were trained 2 ft. apart. These were spur-pruned, but not so closely as is usual, as when the spurs get too long fresh shoots can readily be brought up from the bottom and the old rods cut out. These Vines are planted in the natural soil, which is a stiff, good loam, and, though old, they produce every year heavy crops of really good Grapes. This season 400 bunches have been cut from this house. J. C.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Late Peaches.—Walburton Admirable and Late Admirable have both ripened fine, large fruit of good flavour here this season; but our best late Peach is Princess of Wales, the size, colour, and flavour of which is all that can be desired, and, so far as can be seen, the trees are robust in constitution. I never use manure in soil for Peaches, but I mulch heavily and water copiously when the fruit is swelling. Among Nectarines Victoria does well with us in late lean-to houses; just now (Sept. 23) its fruit is nearly ripe. Pine-apple and Elruze outside have yielded some excellent fruit; the former I think the richest in flavour.—R. Gilbert, *Burghley*.

New Melons.—I regret to see more and more notes on "new" Melons in The Garden. I have lately learnt something about the way in which these new Melons are "sent out." Somebody sends to a show a fine Melon of a kind as well known and easily ascertainable as any of the crossed races of Melons may be. The fruit happens to be a very fine one, and perhaps a neighbouring seedsman, anxious to have a "good new thing" in his catalogue, offers a few pounds for the seed. Then it is easy to give the new variety a name, which is usually that of the most popular titled man of the period. It is hardly necessary to point out the injurious character of this traffic; very short-sighted people may think it good for trade, etc., but in horticulture, as in other things, all futi e or wasted expenditure is a loss to the art and all connected with it in the end.—A. W. H.

GARDEN RECEIPTS.

Orchid Insects.

Most plants are subject to insect-pests, although it is not often that they do any serious damage, that is, if ordinary precautions be taken by the cultivator or his assistants to prevent injury. Thrip is one of the worst, especially if the temperature of the house be excessive and the atmosphere dry; but in the houses devoted to cool Orchids this ought never to be the case. The cool, moist atmosphere of the Odontoglossum-house is not the most favourable for insect life. Red spider sometimes, though rarely, makes its appearance in a dry corner, and if there be a yellow thrip in the house it is almost certain to commence operations on the juicy foliage of Cypripedium Schlimmi. The yellow fly, so common in Orchid-houses, will infest the flower-spikes of Odontoglots and Calanthes, but two or three moderately strong doses of Tobacco smoke will clear them out. Tobacco rag, *i.e.*, the old coverings of the rollers used in the manufacture of twist, is far preferable to the vile rubbish sold as Tobacco paper, and the chances of burning are considerably reduced by its use. In fumigating Odontoglossums great care must be taken, or the smoke will do serious damage. They should never be subjected to fumigation if in the least degree shrivelled by a hot and dry atmosphere. Mr. Culley, who has charge of the well-known collection of Cool Orchids at Ferniehurst, never hesitates to smoke his Odontoglots, but it must be remembered that their bulbs and foliage are fresh and plump, in which condition it rarely harms them, though Mr. Bateman, whose name in connection with Orchids is well known, strongly objected to the use of Tobacco smoke in the Odontoglossum-houses. Remedies for thrips and red spider will be found under their respective headings.

Perfume Jars.

A fine and permanent perfume, pot pourri, for jars may be made by mixing ½ lb. of common salt with ¼ lb. of saltpetre, ¼ oz. of storax, half-a-dozen Cloves, a handful of dried Bay leaves, and another handful of dried Lavender flowers. This basis of the pot pourri will last for years, and you may add to it annually petals of Roses and of other fragrant flowers gathered on dry days, as fancy may dictate. By the same rule you may add, if approved of, powdered benzoin, chips of Sandal-wood, Cinnamon, Orris-root, and Musk. A very excellent pot pourri may be made in winter with 1 lb. of dried Rose petals bought at a chemist's, mixed with 4 oz. of salt and 2 oz. of saltpetre, on which put 8 drops of essence of ambergris, 6 drops of essence of Lemon, 4 drops of oil of Cloves, 4 drops of oil of Lavender, and 2 drops of essence of Bergamot.

Preserving Plants and Flowers.

Dr. Asa Gray, the eminent American botanist, gives the following directions for preserving plants for the herbarium:—For collecting specimens, the only things needful are a small round trowel, a strong knife, and a botanical box or vasculum. These boxes are made of tin, and in shape resemble a sandwich case, the lid opening for nearly the whole length on one side. They are made in various sizes; the most convenient and generally useful, perhaps, is one about 15 in. long and 6 in. across. The specimens collected should be either in flower or in fruit. In the case of herbaceous plants, the same specimen will often exhibit both at the same time, and both should be secured whenever it is possible. Of small herbs, especially annuals, the whole plant, root and all, should be taken. Of larger ones, branches will suffice, with some of the leaves near the root. Enough of the root should be retained to show whether the plant is an annual or a perennial. Thick roots, bulbs, tubers, or branches should be thinned with a knife, or cut into slices lengthwise. For drying the specimens a good supply of soft and unsized paper—the more porous and bibulous the better—is wanted, together with some convenient means of applying pressure. All that is requisite to make good dried botanical specimens is to dry them as rapidly as possible between many layers or sheets of paper, to absorb their moisture, under as much pressure as can be given without crushing the more delicate parts. The best drying paper is that which is made specially for the pur-

pose, and which may be obtained from Mr. E. Newman, 9, Devonshire Street, Bishopsgate, London, E., but the softer sorts of cheap thick wrapping paper will answer very well. The drying pads are made by stitching from eight to a dozen sheets lightly together round the edges.

When the specimens are brought home, each plant should be carefully laid out in a folded sheet of thin, smooth, unsized paper, the flowers and leaves being arranged in the position which they are to retain when dried. The folded sheet with its enclosed specimen is then to be placed between two of the drying pads, and these again between two smoothly-planed boards of suitable size. Placing the whole on a table or on the floor, a weight of half-hundredweight or more (ordinary bricks form very convenient weights) is put on the upper board, and the specimens are so left until about the same hour next day, when the pads are to be removed and fresh well-dried ones put in their places, the boards and weights being also replaced as before. The pads which have been used are to be hung up to dry, so that they may take their turn at the next shifting. This process must be repeated daily until the specimens are no longer moist to the touch, which for most plants requires about a week; after which they may be transferred to the sheets of paper in which they are to be preserved. If very thick pads be used, it is not necessary to change them every day after the first two or three days. It is also to be observed that several pairs of pads, each with its enclosed specimen, may be placed between the same pair of boards, but in that case the weight applied to the upper board must be proportionally increased. When the specimens are quite dry, they may be kept in folded sheets of neat and rather thick white paper; or they may be fastened on half-sheets of such paper, either by slips of gummed paper, or by glue applied to the specimens themselves. Each sheet should be appropriated to one species; two plants of different species should never be attached to the same sheet. The generic and specific name of the plant should be written in the lower right-hand corner, where the time of collection, the locality, the colour of the flowers, and any other information which the specimens themselves do not afford, should be also duly recorded. The sheets should be all of the same size; 16½ in. by 11½ in. is a convenient size. The sheets containing the species of each genus should be placed in genus covers (made of a full sheet of thick coloured paper), which fold to the same dimensions as the species sheet, and the name of the genus is to be written on one of the lower corners. These should be arranged under the Orders to which they belong, and the whole kept in closed cases or cabinets, either laid flat in compartments like large pigeon-holes, or else placed in thick portfolios, arranged like folio volumes, and having the names of the Orders lettered on the back.

The Rev. George Henslow proceeds somewhat differently. The materials recommended by him for this purpose are common cartridge paper, thick white blotting paper, cotton wadding, and millboard, all cut to the same size. The plants should be gathered in dry weather, and soon after the flowers open when their colours are brightest. Succulent plants, such as Daffodils, Orchids, or Stonecrops, should be put into scalding water, with the exception of the flowers, for a minute or two, then laid on a cloth to dry. Arrange the specimens and papers in the following order:—Millboard, cartridge paper, wadding (split open, and the glazed side laid next to the cartridge paper), blotting paper, the specimens having small pieces of wadding placed within and around the places to draw off all the moisture as quickly as possible, blotting-paper, wadding as before, cartridge paper, millboard. When the specimens, &c., are thus arranged heavy weights should be put on them: about 30 lbs. the first day, 60 lbs. afterwards. Remove them from under pressure in a day or two; carefully take away all the papers, &c., except the blotting papers between which the specimens are placed; put these in a warm air to dry, whilst the removed papers, &c., are dried in the sun or by the fire. When dry (but not warm) place them in the same order as before; put all under the heavier pressure for a few days, when (if not succulent) they will be dry. Flowers of different colours require different treatment to preserve their colours. Blue flowers must be dried with heat, either under a case of hot sand before a fire, with a hot iron, or in a cool oven. Red flowers are injured by heat; they require to be washed with muriatic acid, diluted in spirits of wine, to fix the colour. One part of acid to three parts of spirit is about the proportion. The best brush with which to apply this mixture is the head of a Thistle when in seed, as the acid destroys a hair pencil, and injures wherever it touches, except glass or china; therefore it should be used with great care. Many yellow flowers turn green even after they have remained yellow some weeks; they must, therefore, be dried repeatedly before the fire, and again after they are mounted on paper, and kept in a dry place. Purple flowers require as much care, or they soon turn a light brown. White flowers will turn brown if handled or bruised before they are dried. Daisies, Pansies, and some other flowers must not be removed from under pressure for two or three days, or the petals will curl up. As all dried plants (Ferns excepted) are liable to be infested by minute insects, a small quantity of the poison, corrosive sublimate dissolved in spirits of wine, should be added to the paste, which it will also preserve from mould. The best cement for fixing the specimens on to the paper or cardboard is gum paste. It is composed of thick gum water and flour mixed in warm water by adding the two together warm, and of a consistency that will run off the hair-brush.

There are several ways of preserving flowers in their natural colours, such as drying, smoking with brimstone, &c. There are several different processes, each adapted to the condition of the flowers which are to be dried. The most simple of all is to cut them in a dry state and hang them in a dry, shady place on strings or on stakes, not too thick, where for many years they may dry and remain till they are used. In a room not closed against the daylight, or at least against the sunlight, the colour will not keep well, but will bleach more and more and become pale, while in a damp room the flowers will rot. If, however, they are to be used for bouquets or other decorations, it is a very good plan to place them in a slightly damp atmosphere the day before, where they may attract a little moisture; if used in quite a dry state, they are too liable to break, which is prevented if they have thus been moistened a little. Care, however, should be taken as to the state of the flowers when cut for drying. The best state for most kinds of flowers is when they have not yet begun to bloom (not yet opened), because after being cut and hung up they always, in some degree, continue their blooming; but if cut in a too full blooming state, they pass, while drying, into the state of ripening, *i.e.*, they ripen their seeds and are afterwards useless, as those flowers are too liable to fall out. If all this be attended to, the following kinds of flowers preserve their natural colours very well:—Statice (many varieties, especially S. incana, sinuata, and armeria) keep beautifully; Gypsophila elegans, very pretty in bouquets, even in those of fresh flowers, and much used for this purpose on the Continent; Gomphrena globosa purpurea, Helichrysum (many varieties, especially the hardy annual ones, but they ought to be cut in a very early stage, or in bud, because they are finest if cut before they open). To the Helichrysum belongs also the celebrated Immortelle plant, Acroclinum roseum, a pretty flower of a beautiful rosy colour; Rhodanthe Manglesi, a little smaller than an Acroclinium, and one of the prettiest of flowers for drying; Delphinium, all the blue or red varieties, as Ajacis, candelabrum, and the blue perennial varieties, especially fine also is our common Delphinium Consolida, which represents the finest blue among dried flowers, and may be found in the summer time in the fields in some places. There are also the Grasses which keep well, and are of a very ornamental character, either by themselves in Grass bouquets, or together with other dried flowers, giving them a lighter appearance, for instance, Gynerium argenteum, the pretty varieties of Agrostis (A. pulchella and nebulosa), Lagurus ovatus, Hordeum jubatum, Briza and its varieties, among which is our common Briza media, one of the finest of this genus, and many others. We now come to flowers which are more difficult to dry, and which would lose their colour and form if dried in the manner already described, such for instance, as Viola tricolor maxima, Pelargonium, Geranium, &c. They must all be dried in silver sand; the silver sand must be rendered quite clean, without any organic matter whatever, by repeated washing, until the sand ceases to discolour the water; afterwards it must be perfectly

dried. To make it fit for the purpose, however, we must heat the sand rather high, and in this state mix with it by constant stirring a small piece of composite candle, which prevents the sand from adhering to the flowers. Afterwards we must have a box not higher than 3 in., but as broad as possible; this box has instead of a bottom a narrow-meshed iron-wire net at a distance of ¾ in. from where the bottom should be. Such a box is placed on a board and filled with sand till the net is just covered with a thin layer of sand; upon this layer of sand is then placed a layer of flowers, and then again a layer of sand, then flowers, and so on; the layer of sand varies in thickness, according to the kind of flowers, from ½ in. to ¾ in. In this way we may put into the box two or three layers of flowers, more than three will not answer well; this being done the box must be removed to a very sunny, dry place, the best being close under the glass in an empty greenhouse, &c., exposed to the full influence of the sun. If the weather be sunny and dry the flowers will be perfectly dried in our English climate in ten days or even a week of sunny weather; and if we have no sun at all, but the weather be foggy and wet, we must dry our flowers in a dry room which is slightly heated. When the flowers are dry the box is lifted a little, the sand falls gently through the iron net, and the flowers remain in their positions over the net without any disturbance whatever. They should then be taken out carefully and kept in a dry and, if possible, dark place, where no sun can reach them, and afterwards they will keep very well for many years. In this way nearly every kind of flower, single or double, may be thoroughly dried. Generally, they are dried in this way for the trade—Pansies, Pelargoniums, Geraniums (the double ones are especially fine), Asters, Roses, Calceolarias, Aconitum, &c.; care is, however, to be taken that the flowers are cut in dry weather, and that, while lying in the sand, no part of the flower shall touch another part, as this always spoils the colour and causes decay. Sand must be filled in between all the parts of a flower, therefore it is necessary to insert the double flowers in an erect position, in order to fill the sand between the petals, while most of the single-blooming flowers, especially Pansies, must be put in with the stalks upwards. With Calceolarias, Aconitum, and other flowers which are formed like them, the cavity of the flowers must be carefully filled with sand before laying them in. White flowers do not retain their pure white colour, but always become slightly tinged with yellow. Among dried flowers we have hardly any representative of a pure white, except the Ammobium alatum and white Immortelles.

If the brimstone process be adopted, we must proceed as follows:—The first thing necessary is to procure a chest suitable in size to the quantity of flowers intended to be dried, the best size for general use being one about 3 ft. or 4 ft. square. In the under part of one side of the chest there should be a small opening, to be closed by a bar, through which the basin containing brimstone must be put into the chest; this opening must be covered inside with perforated tin, in order to prevent those flowers which hang immediately over the basin from being spoiled. The chest should be air-tight, and in order to render it so paper the inside thoroughly. When the chest is ready for use nail small laths on two opposite sides of the interior, at a distance of about 6 in. apart, upon which lay thin round sticks upon which to arrange the flowers. Care should be taken, however, that the flowers on the sticks, as also the sticks themselves, are not too close together, or the vapour will not circulate freely through the vacant space around the flowers. The best way to hang the flowers is to tie two of them together by the ends of their stalks with a piece of mat or thread, and afterwards place them upon the sticks so as to prevent them from touching each other. When the chest is sufficiently full of flowers close it carefully, place a damp cloth on the sides of the lid, and some heavy stones upon the top of it, after which take some brimstone broken into small pieces, put it in a small flat basin, and with a match kindle and put it through the opening in the bottom of the chest and shut the bar. It is a good plan to make an air-hole on opposite sides of the chest, which will assist the ignition of the brimstone, and which should be closed when the latter burns freely. Leave the chest undisturbed for twenty-four hours, after which time it must be opened, and if the flowers be sufficiently smoked they will appear white, if not they must be smoked again, when a little more brimstone may become necessary. When sufficiently smoked, take the flowers out carefully and hang them in a dry airy place in the shade for the purpose of drying, and in a few days or even hours they will recover their natural colours, except being only a shade paler. To give them a very bright shining colour, plunge them into a mixture of ten parts of cold water and one of good nitric acid, drain off the liquid, and hang them up again in the same way as before. Thus preserved they will keep for years. The best flowers for this process are Asters, Roses, Fuchsias (single ones), Spiræas (red-flowered kinds, such as callosa, Douglasi, &c.), Ranunculus, Delphiniums, Cytisus, &c. The Roses ought to be quite open, but of course not too fully blown. A French writer, M. Boulade, states that if freshly-gathered plants be spread out between sheets of filtering paper in the usual herbarium manner, and then heated between two bricks in an oven for two or three hours at about 150° Fahrenheit, they will be perfectly and permanently preserved without impairment of the most delicate colours. The process is rendered more rapid and certain if the layer of filtering paper next the flowers be changed after about an hour.

C. W. Quin.

COTTAGERS' SHOWS.

Our annual autumn show of cottage garden produce has just been held, and, after a most trying season for vegetable culture, it was very gratifying to the promoters to find that there was no falling off in the quantity or quality of the specimens brought for exhibition. The general opinion previous to the Show was that the size of root crops—such as Potatoes, Onions, Parsnips, and Carrots—would not equal that of former years; but not only was the maximum size fully reached, but the average quality was far above that of ordinary seasons—in fact, almost every specimen brought for exhibition was without blemish. Now, as a clear bright sample in root crops invariably denotes good quality, both in regard to keeping and cooking, it may be fairly assumed that the root crops are more frequently deteriorated by too much moisture than by too little. I may here remark, that we find the old adage of "practice makes perfect" fully borne out by our cottage exhibitors, who every year improve in the manner they send up their products, both in the matter of cleanliness of samples and of taste in their arrangement. This is due to the many opportunities afforded to cottagers generally by the increase in the number of local exhibitions throughout the country; and, although the prizes awarded to cottagers may not be of any great pecuniary value, or the objects exhibited require any great skill to cultivate, it is surprising what an amount of interest centres in these humble competitions; and doubtless they are most excellent institutions for the encouragement of thrifty, industrious habits (thereby securing a manly independence), in preference to indiscriminate and ill-judged charity. For it must be obvious to the most casual observer that crops are not brought to a high state of perfection in a season like the present by mere accident, but that a long and careful preparation and judicious culture must necessarily have to some extent preceded the preparation of the crops before such a harvest could have been produced. That such results are entirely due to thorough deep cultivation and the utilising of every material available for manure is in this case well demonstrated, for some of the most successful competitors cultivate plots of land reclaimed from waste common land considered quite worthless, and the quantity of manure employed has been by no means large, but by thoroughly breaking up and pulverising to a great depth even poor soil, successful results are obtained in most seasons. Those cottagers who have little or no garden direct their energies to the cultivation of window plants, and a really creditable collection is annually staged in competition for the prizes offered. Bouquets and baskets of cut flowers attract more competitors every year, while the cultivation of hardy fruits has been largely increased by the distribution of young trees of good free-bearing kinds as presents or at wholesale prices. Many a cottage wall is now vastly improved in appearance by a luxuriant Apricot, Pear, or Plum tree being trained on it, besides being a most acceptable addition to the revenue of the tenant. The most profitable kinds for this purpose are Early Pears, such as Jargonelle and Williams' Bon Chrétien; or late keepers, as Glou Morceau and Beurré Rance. Morello Cherries are both prolific and always saleable. Apricots, when the soil is suitable, are eminently adapted for cottage walls, as they bear well on the spurs, and if sheltered by tolerably wide eaves will be found generally sure croppers. Plums, such as Kirke's, Goliath, and Jefferson, come quickly into bearing, and remain so for a number of years.

James Groom.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

October 4.

This meeting was one of the most interesting which has taken place for some time, and was fairly well attended. Messrs Veitch & Sons contributed an attractive group of hybrid and other Orchids, including a fine example of the blue-flowered Vanda cœrulea bearing four flower-spikes, on the two largest of which we counted nineteen and seventeen flowers and buds respectively. In the same group was a good plant of Cypripedium Sedeni, the best of all hybrid Lady's Slippers, and two flowering specimens of the chaste and beautiful Cattleya exoniensis. Mr. Charles Turner furnished a well-grown collection of Tree Carnations in splendid condition; also some new seedling varieties, dwarf and distinct in colour, notably Sir Garnet Wolseley and La Débutante, both of which are fully described elsewhere. Stands of seedling Pompones and other Dahlias from Mr. Turner, and some new seedling Dracænas from Mr. Wills were also much admired. Messrs. Lane & Son, of Berkhamsted, showed a splendid collection of Grapes, in all fifteen varieties, among which the Muscats were especially good, as were also clusters of Mrs. Pince's Black Muscat, Golden Queen, Dr. Hogg, Black Prince, Barbarossa, Gros Colman, Alicante, and others. This, by far the best collection of Grapes shown here this year, was considered worthy of the Davis medal, which we hope to hear has been awarded to it.

First-class Certificates.—These were awarded to the following, viz.:—

Dahlia, Chris. Ridley (Turner).—A really beautiful crimson-scarlet-coloured variety with a good centre—one, in short, of the best seedling Dahlias of the present year, and one which will fill a prominent place in all exhibition collections.

Dahlia, Burgundy (Turner).—A rich, puce-coloured flower shaded with crimson-purple, which is densest in the centre. It is of large size and distinct in colour.

Dracæna Gladstonei (Wills).—A stately-habited plant with re-curved, dark purplish-green foliage, the upper leaves being flaked and margined with crimson. Decidedly one of the best of the large-growing kinds.

Maranta Massingiana (Veitch).—A dwarf-growing variety, and certainly one of the most distinct and beautiful of all the Marantas. Its leaves are about 6 in. in length and 3 in. in breadth, rich velvety olive-green, with a central bar of glaucous blue: rich purplish-brown blotches also occur between the gracefully-curved glaucous veins. A chaste and desirable addition to stove fine-foliaged plants.

Stove and Greenhouse Plants.—In a choice group of rare and beautiful Orchids, which came from Messrs. Veitch & Sons, we observed two fine varieties of Cattleya exoniensis, a richly-tinted Cattleya superba, and a new hybrid Cattleya, in the way of C. Fausta, although perhaps scarcely so bright in colour. In the same collection were also a large flowered form of Lælia præstans, one of the most distinct of all the dwarf-growing species; likewise a plant of Cattleya maxima, with rosy-lilac sepals and petals, and a delicately purple-pencilled lip—a fine plant of Vanda suavis—bore two good spikes; and we also noted a specimen of Oncidium Forbesi—a brightly-tinted variety of O. crispum bearing a graceful spike. Messrs. Rollisson & Sons showed a Cattleya rameli C. Mylami, said to be an hybrid between C. crispa and C. granulosa. Its spikes are five-flowered, the sepals and petals being similar to those of C. granulosa, the lip like that of C. crispa, richly veined with purple in front, and nearly white behind. Mr. J. Wills furnished three new Dracænas, viz., D. Tellingi, a broad bronzy-green-leaved plant in the way of D. Fraseri, but even more effective; D. majestica, in the way of D. Shepherdi and D. Gladstonei, a cross between D. excelsa and D. ferrea, to which a first-class certificate was awarded. Mr. Ollerhead, Wimbledon House, contributed interesting groups, consisting of about fifty plants, suitable for indoor decoration; also a plant of Lycopodium phlegmeria, a graceful Cryptogam allied to our native club Mosses, and rarely seen except in botanical collections; as exhibited, however, it formed a distinct and beautiful decorative plant, its fresh green Epacris-like stems being terminated by elegant tassel or catkin-like appendages of a pleasing shade of light green. Messrs. E. G. Henderson, of the Pine-apple Nursery, Maida Vale, showed a new Coleus in the way of Lady Burrel, and a large unnamed species of Tillandsia, bearing green-petalled flowers on a long pendulous spike, the exserted anthers being of a soft blue colour, and the large bracts at the base of the flower-spike vivid scarlet; its leaves are 4 ft. to 5 ft. in length, and of a glaucous green tint marbled with grey. Mr. G. F. Wilson, of Heatherbank, Weybridge, sent a well-flowered specimen of a dark spotted variety of Tricyrtis hirta, a slender-habited Japanese plant, being alternate stem-clasping leaves and small, pale, purple-spotted flowers somewhat resembling those of a Passion-flower in structure. Mr. Chambers, of Westlake Nursery, Spring Grove, Isleworth, showed a boxful of Begonia Magenta Queen grown in the open air, but fresh and very floriferous, also two plants of an excellent crested form of Pteris serrulata. Mr. Ollerhead sent cut flowers of the long-petalled Nymphæa dentata. Messrs. E. & J. Perkins, of Leamington, exhibited cut sprays of their new Seedling Begonias, Excellent and majestica, also a plant of B. Masterpiece, a bushy-habited, crimson-scarlet variety, likely to form an excellent decorative plant. A very pretty bouquet, consisting of Begonia flowers and Fern leaves, was exhibited by the same firm. A plant of the bluish-lilac, crisp-petalled Amaryllis Rayneri came from Mr. W. Rayner, St. Andrew's, Weybridge, bearing two flowers on a short ancipitate scape, the bulb being 15 in. in length, terminated by pale green curved or sickle-shaped leaves. Mr. Noble, of Sunningdale, sent his dwarf Pampas Grass (Gynerium argenteum pumilum) which produces erect spikes rarely more than 4 ft. in height. A choice collection of double-flowered Zonal Pelargoniums in a cut state came from the Society's Gardens, Chiswick, the prevailing colours being scarlet, white, salmon, and rose. Among these we noted Madame A. Baltet, an excellent white variety; Vesta, a brilliant semi-double scarlet, and Bouquet, a full salmon-rose. Mr. Turner's Tree Carnations already alluded to varied from 1 ft. to 2 ft. in height, and were well flowered. Among them we specially noted Miss Jolliffe, salmon-rose; Scarlet Defiance, bright crimson-scarlet; Rose Perfection, bright rose, a fine full flower; Jessica, a full fringed flower; Vestal, white; La Débutante, a dark purple seedling; Coronation, rich crimson-scarlet; Sir Garnet Wolseley, buff flaked with vermilion; Prince of Orange, lemon-yellow laced with red; Lilian's Glory, a splendid dark crimson-scarlet, nearly 4 in. in diameter, and full like a double Hollyhock, and Proserpine, also a very attractive scarlet-flowered variety. Among Dahlia blooms from the same exhibitor we remarked the following new seedlings, viz., Mrs. Purves, canary-yellow tipped with white; Figaro, orange-buff tipped and margined with vermilion; Drake Lewis, a full and shapely crimson-scarlet flower; The Rover, distinct orange-buff—a flower of decided merit; Mrs. Standish, canary-yellow tipped with white; Canary and Mrs. Hobbs, clear yellow; Burgundy and Chris. Ridley described elsewhere. Half-a-dozen well-grown, dwarf, bushy Bouvardias in pots came from Mr. Chas. Turner, each bearing from twenty to fifty trusses of buds and flowers. The varieties consisted of Hogarth, rosy-scarlet; Vreelandi, white; and longiflora flammea, a floriferous scarlet variety with a rosy tube. Mr. Dean, of Bedfont, Hounslow, contributed two large stands of French and African Marigolds; also a vaseful of Violets, the variety being Prince of Wales, a large rich purple, deliciously fragrant kind, well suited for early market work.

Fruit.—The chief attraction in this department was the splendid collection of Grapes furnished by Messrs. Lane, whose clusters of Muscats have seldom been equalled. Associated with them was also the new Golden Queen (one of the late Mr. Pearson's seedlings), perfect both in bunch and berry; Muscat Hamburgh was also in good condition; and we have never seen Mrs. Pince's Black Muscat better finished than it was on this occasion, being perfectly black, with a heavy bloom. Alicante, Barbarossa, Black Prince, and Gros Colman were also well represented; as also was Dr. Hogg, another new Grape, with the rich Chasselas-like flavour of the Duchess of Buccleuch, but larger both in bunch and berry. A good cluster of the seedless Black Monukka came from the Society's Garden at Chiswick, the flesh being very tender and excellent in flavour. This variety is so distinct that a single rod or two should be grown in all Grape-growing establishments. Mr. Ollerhead showed a well-grown Queen Pine, and a few dishes of Apples, of no especial merit, came from various exhibitors. Mr. Dean sent a dish of Vegetable Marrow preserve, really excellent in flavour.

OBITUARY.

Died, at Faringdon, Berks, on September 19, 1876, George Milne, for many years gardener at Buckland, aged seventy-one years, husband of the late Mrs. Jane Stuart Milne, a writer on botany.

NOTES AND QUESTIONS—VARIOUS.

Hardiness of Camellias.—Several large Camellias occupy a south-west wall in the Arboretum at Longmead, Bishopstoke, Hants, and although subjected to many degrees of frost every winter, in the month of April they annually produce hundreds of double white and red blossoms, such as are seldom equalled on plants grown in-doors; the foliage, too, is dark green, large, and healthy.—D. S. Gillett, *Weybridge Heath.*

Late Peaches.—Mr. Tillery's note (p. 303) on late Peaches is opportune, as respects intending planters who are anxious to know the best kinds to plant. I can endorse all he writes in favour of the sorts named, and would ask to be allowed to supplement the list by the addition of Raymaeckers. I had this kind from Mr. Rivers six years ago, and it has never failed to produce a full crop of fruit of the first size and quality.—W. W. H.

Colston Basset Melon.—I can corroborate Mr. Culverwell's statement (see p. 303) respecting this Melon. We have grown several of the most popular kinds this season, and have fruited seventy plants; all we have grown are more or less good, and each has some useful quality to recommend it; but with us none equals Colston Basset and Read's Scarlet Flesh. Of these two I do not know which is the best. The largest Colston Basset we cut this summer weighed 6 lb. 6 oz.—Thomas Combes, *Hendre Park, Monmouth.*

Late Plums.—Amongst Plums now in season I find Coe's Golden Drop and Reine Claude de Bavay to be the best amongst light-coloured kinds, and Coe's Late Red and Ickworth Impératrice the best amongst dark sorts. These form useful additions to the dessert where great variety is required late in the autumn. Many late Plums are only valuable on account of their late keeping qualities; but Coe's Golden Drop is one of the finest flavoured and best of all dessert Plums when fully matured.—J. Groom, *Henham.*

Barnet Nurseries.—These, as will be seen by an advertisement in another column, have been taken by Mr. James Cutbush, who will, in future, carry them on in conjunction with his establishment at Highgate, under the title of Wm. Cutbush & Son.

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

GROUPING AND MASSING ALPINE FLOWERS.

THE usual plan of arranging these is the cause of more deaths and failures in their cultivation than anything else that hinders their successful culture. The rule is to place them in mixed fashion pretty closely together, and the usual result is, that the strong kinds overrun the dwarf and slow-growing species, which in consequence soon perish. It is common to see the Wood Strawberry, the Periwinkle, the Tormentil, or still coarser plants, take possession of rock-gardens originally planted with choice flowers. But long before that fate overtakes the Alpine garden, another evil results from the common system, and that is the absence of good or natural effect. Dotting each favourite plant all over the place is the way to secure monotony and poverty of effect, as well as the eventual loss of the best plants. In this fashion nothing is gained by having an extensive or varied rock-garden, because the same effects are repeated in all its parts, and the result is as unnatural as it is unfortunate for the plants. One never sees anything like the mixture alluded to in the Alpine pastures or on the rocks. Often a carpet of one plant charms us there; sometimes the carpet is inlaid with one or two other plants, but generally each bank or mantle of turf or ledge of rock has a special character resulting from the individuality of the one or more plants that adorn it. The opposite effect is seen in the garden in which the general mixture system gives the same aspect to the whole concern. There is no reason why this should continue. Improvement in artistic effect, in cultivation, in the preservation of the rarest species, as well as the better known kinds, and in interest to the observer would result from the simpler plan of grouping and massing Alpine flowers. This may be done with one kind, or with kinds allied in size or character. For example, if we have fifty plants of the common Gentianella (Gentiana acaulis), it is better to make one or more large groups or carpets of them than to scatter them all over the rock-garden one by one. Better still would this practice be with the Vernal Gentian, which, being a slower grower and dwarfer, is more liable to be exterminated by rapid-growing neighbours. Weeds and "interlopers" are seen at a glance in such groups or carpets, and may be promptly dealt with. Good preparation as to soil, stones, position, &c., is more likely to be secured in the case of selecting one or two spots for a favourite plant, than in planting it in a score or two different places. Those who know and love such plants may easily acquire the habit of forming groups and masses in a free and natural manner, avoiding every trace of formality, and as a rule only placing one or two kinds on a bank or ledge. In this way, if strong or coarse kinds be placed in the rock garden, the limits of their domain will be more clearly defined than is commonly the case. Often, in consequence of not adopting the natural grouping or massing system, people are tempted to plant Ivies, Periwinkle, Clematis, and like plants, so as to hide the bareness of the ground; but bare ground may be easily covered by following the right system with true Alpine flowers. Instead of planting one tuft, the way to cover and at the same time beautify the ground is to divide the plant or tuft into as many parts as may be, and thus make the rock-garden a nursery in a sense as well as a home for the flowers. Some scarce plants will not bear this division, but the majority will. The young roots emitted by the divided portions do much more efficient work than the old and broken ones of the single plant or tuft with which we begin. The chances of success are greater, for if we divide a healthy plant or tuft of Draba aizoides, as is often planted by itself, we shall have no difficulty in getting a dozen or more young plants, which, carefully "set" among broken stones even on level borders, will thrive if coarse plants be kept away, though severe winters, excessive wet, or slugs, will sometimes destroy a few plants which we do not miss in our carpet or group. Moreover, the bloom is in such cases fairly seen, and its character impressed upon all who see it, whereas a few blooms hidden among numerous other plants may even escape the notice of those who planted them. Speaking of making the rock-garden a nursery bed it may be added that no rock-garden can be successfully and permanently adorned without nursery or reserve beds to fill blanks; it is, however, quite possible by adopting the dividing and grouping system to do without special nursery beds or with fewer of them. One of the best reasons for wide and natural groups of Alpine plants is that they secure distinct aspects of vegetation, as each portion of the garden may be thus easily made to possess a character of its own. Instead of the general mixture (or muddle) everywhere the observer goes from point to point, seeing new aspects of vegetation at every turn, and is impressed with the beauty and interesting character of the plants. If climbers and vigorous trailers be desired, suitable positions may be selected where they may luxuriate without injury to other subjects. By the adoption of the broad and natural system herein alluded to we may also secure effects of colour which will leave the efforts of the formal "bedding system" behind as regards brilliancy alone, because we can get more glory of colour without a trace of geometry. The strict limitations of the usual mode of arranging flowers geometrically offend the eye, whereas in the rock-garden, and still more in the wild garden, greater numbers may be grown than anybody could venture to place in formal masses, and the fringes and distant points of the carpets, colonies, or groups, fade out of sight in that indefinite way which is so charming in Nature's gardens. It was the wretched effect of the old mixed planting which brought forth the "massing" system, with its original, simple, and telling beds. The great want in our gardens, not only in the rock-garden but in all the ornamental departments, is the massing and grouping system minus geometry. V.

NEW HYBRID TUBEROUS-ROOTED BEGONIAS.

DURING this summer I have grown, carefully studied and compared with older varieties nineteen newly sent out hybrids of this most beautiful and highly ornamental family, five of which produce double male flowers and the remaining fourteen altogether single flowers. All the five doubles and nine of the single-flowered kinds were sent to me by M. V. Lemoine, of Nancy; two came from Messrs. Veitch, of Chelsea: two from M. Van Houtte, of Ghent; one from Mr. B. S. Williams, of Holloway; and one from M. J. B. Deleuil, of Marseilles. I have also received from M. Lemoine two other named double varieties, which unfortunately died early in the season, and likewise several unnamed seedling sorts under number for trial, and also a second variety from Mr. B. S. Williams, named Royalty, which has not yet bloomed, but which is said by him to be the finer of his two kinds. I shall now proceed to describe *seriatim* the above-mentioned varieties, and give my opinion briefly concerning the merits and demerits of each, which I hope may be some guide to those who may wish to select for next season a few of the finest and most meritorious kinds from amongst the many now offered for sale. At the head of all the double-flowered varieties stands undoubtedly Gloire de Nancy. This magnificent Begonia is not done justice to in the coloured plate presented with No. 16 of the "Revue Horticole" for this year, as the blooms were with me nearly double the size they are there represented to be; the beautiful deep carmine colour, however, is most accurately and delicately reproduced in the plate. This variety is of an upright and branching habit of growth, and is also very free-flowering, with the additional great merit of having nearly all its blooms male, and therefore double, my plant only producing two or three female flowers out of a total of between thirty and forty. This is altogether by far the finest variety that has yet appeared among this beautiful family, and well deserved the special gold medal awarded to it by the Société Centrale d'Horticulture de France when submitted to them last season by its raiser, M. Lemoine. Salmonea plena, also figured in the above-mentioned plate, is of a pleasing shade of deep rosy salmon, but by no means so fully double as the last-named variety. It will probably be better suited for greenhouse culture, as I have seen it very much finer under glass than it was with me in the open

air. Lemoinei is also figured on the same plate with the two last-named varieties, and has been already fully described by me in Vol. VIII. of The Garden, p. 323. It is a very fine kind. Balsaminæflora is an exceedingly beautiful and full double-flowered variety, with rather irregularly-developed outer or guard petals; it has pale green foliage, and apparently a compact and low habit of growth; the blooms are of a very pleasing shade of light red, and are produced in the usual proportion of one double male between a couple of females, which are invariably single. President Burelle is a strong-growing variety, with large, deep green foliage, producing a profusion of fine, bold flowers of a deep vermilion colour, the males of which are semi-double; this is altogether a brilliant and desirable kind. Louis Thibaut is of a low and compact habit of growth, bearing blooms of a fine deep carmine colour, the males of which are fully double; a very desirable variety.

The two other double sorts sent out this season by M. Lemoine, the blooms of which I have unfortunately not yet seen are named after the late M. L. Van Houtte and myself. Of the eight single-flowered varieties sent out this season by M. Lemoine, the finest and most brilliantly-coloured is certainly Oriflamme, which produces large and perfectly-formed flowers, of a fine deep carmine colour and great substance. It has an upright habit of growth, and dark green, hairy foliage, and is very free flowering. It is unfortunately, however, of rather a hard constitution, which places considerable difficulties in the way of getting cuttings. Diamant has fine large blooms of a deep rose colour outside and rosy blush inside, very freely produced. Its habit of growth is low and tufty, with large, bold, deep green foliage, slightly veined with white. It is altogether a most distinct and beautiful variety, of quite a new shade of colour among these plants, and showing most distinctly the presence of the Roseflora breed. This should be in every collection of Begonias. Monsieur Marcotte, a strong-growing variety, with dark green, medium-sized foliage and large blooms, of a very pleasing and novel shade of light rose colour, resembling Van Houtte's Mdlle. Zimmermann. El Dorado is not such an acquisition as it promised to be, for the blooms are but of medium size, and are produced on long, pendulous foot-stalks, which, unless raised by the hand, show only the outside of a dull red colour; the interior of the bloom is of a deep golden-yellow. This variety may be useful for growing in wire baskets hung from the roof of a greenhouse, where, looking up at them from below, one could see only the yellow interiors of the flowers. Its habit of growth is low and compact, with deep, green-toothed, and pointed foliage, resembling that of Pearcei, which is doubtless one of its parents. Wilhelm Pfitzer is in the way of Rubens, of rather a deeper shade of colour, and of a dwarfer and more compact habit of growth, and not very free blooming; it will probably be better adapted for pot culture in the greenhouse than for the open-air garden-bed. Wilhelm Liebnecht has light crimson blooms, not very freely produced, a low, tufty habit of growth, and large, glaucous foliage veined with white; a variety of second-rate merit, but may be better under glass. Crèpuscule did not show itself at all to advantage with me in the open air, but when grown elsewhere in a pot in the greenhouse it produced a profusion of large bold blooms of a curious buff colour, unlike those of any other variety known to me, and, though not individually beautiful, yet, as a distinct and free-flowering variety, it may find favour with many. Lustre is a coarse-growing, pointed-leaved sort (somewhat in the way of that worthless variety, Molière), with large red flowers, but, on the whole, of only inferior merit. M. Van Houtte's two novelties for this year are Mademoiselle Zimmermann, of a very pleasing shade of light rose, with a vigorous and upright habit of growth, but unfortunately possessing the great fault (which made his new variety of last year, Léon Plisson, quite worthless) of dropping nearly all its male blooms in a bud state unopened, the female blooms alone expanding; these, however, are of good substance, and not thin and ragged, as in Léon Plisson just mentioned. Madame Oscar Lamarche is an exceedingly fine large-flowered variety, of perfect form, and deep glowing carmine colour, sent to me in the spring of 1875 by mistake, under the name of Emeraude, by M. Van Houtte, and fully described under that name in Vol. VIII. of The Garden, p. 405. This is one of the best and most free-blooming of all Begonias. Charles Raes, sent out by M. Van Houtte in 1874, did not bloom with me last year, therefore it may be now described. It is in my opinion quite the best variety of its year; it is of upright habit of growth, and produces very freely large blooms of a fine, deep rose colour. Messrs. Veitch's Acme will be found a vigorous and strong-growing variety, with handsome glaucous foliage, and produces freely large and magnificent blooms of a deep carmine colour and fine substance, holding its blooms well, and is altogether an exceedingly fine kind. Kallista, sent out by the same firm, hardly, I think, deserves its somewhat pretentious name of "most beautiful." It is an upright and slender-growing variety, with very dark green foliage, and producing freely rather thinly-formed, pointed-petalled, medium-sized blooms, of a deep blood-red, perhaps the darkest shade yet sent out, but inferior in both shape and substance of bloom to Van Houtte's fine variety of 1875, named F. Siesmeyer. Mr. B. S. Williams' Magenta Queen is a free-growing, branching-habited variety, producing rather freely medium-sized, bright rose-coloured flowers, of rather thin substance, and not opening well; a variety of second-rate merit only. M. J. B. Deleuil's Petrarque, to be sent out by him this autumn or next spring, is a very free-growing variety, with most conspicuously curved and pointed foliage, and producing a profusion of large, light red flowers; altogether a showy and desirable kind, well worth adding to any collection, and admirably suited for filling the centre of a small bed. I have also grown this season in the greenhouse the following varieties raised by Messrs. E. G. Henderson within the last year or two, most of which are exceedingly ornamental as pot plants, viz.:—Prince of Wales, a fine, glowing crimson kind with large blooms, very freely produced on long, pendulous footstalks, habit erect, with conspicuous hairy foliage; a very fine variety. Sir Charles Isham, an upright-growing, branching variety, with smooth foliage, produces very freely large and handsome blooms of a deep claret colour, on long, pendulous footstalks. Mrs. Harry Taylor is a much dwarfer-growing variety than the two last-named, of very branching, bushy habit, producing very freely handsome medium-sized blooms of a bright orange-scarlet. White Queen is the best white I have yet seen, the internal petals being really pure white. Nearly all the blooms produced are males, the few females that do appear being utterly small and insignificant. This variety is moreover very free-blooming, and quite an acquisition. Princess of Teck, a very free-blooming, upright-growing variety, produces blooms of a lovely bright shade of rose colour, the males of which are nearly all fully double. Countess of Dudley is a low-growing, bushy, pendulous variety, which produces small buff-coloured flowers, the males of which are usually rather more than semi-double. M. Otto Frœbel, of the Neumunster Nurseries, Zurich, has sent me four varieties, named respectively, Frœbeli, after himself; Octopetala and O. rosea, all of which are imported species; and Mont Blanc, a hybrid of his own raising, of which I may have something to say later in the season, as these seem all late-blooming kinds; the first and last-named of them are only now opening their first blooms, while the two Octopetalas show no sign of bloom as yet, being, indeed, described by their introducer as properly in this country late autumn or winter bloomers.

Belgrove, Queenstown. W. E. Gumbleton.

Datura meteloides.—This handsome Mexican plant, called in gardens Wright's Datura, has a fine appearance in the form of isolated specimens in sunny but sheltered nooks in the sub-tropical garden. It grows from 3 ft. to 4 ft. high, and has wide-spreading branches that bloom profusely from the middle of July till frost sets in. The flowers are white tinged with mauve; they measure from 4 in. to 6 in. across, are very showy and sweet-scented, but the leaves emit a disagreeable odour. The roots may be lifted and wintered, like those of Dahlias and Cannas, and planted out the following May; but as this Datura ripens seeds in abundance, it is usually treated as a half-hardy annual, and in that case it is sown in March, and transplanted at the end of May, when good-sized plants are soon obtained which flower in July. Plants raised from roots kept over winter are, however, the most floriferous.—Wm. Falconer, *Botanic Gardens, Cambridge, Massachusetts.*

MUSHROOM CULTURE.

Numbers of people think that the culture of the Mushroom only begins when the bed is spawned, and practically speaking it does perhaps, but success depends upon circumstances considerably anterior to that. The preservation of the spawn has much to do with it. If kept too cold it may be dead, and if kept too warm and moist, it may have become too far developed for cultural purposes. Well-preserved fertile bricks are permeated with a thin, whitish-looking mould, and smell strongly of Mushrooms. If the spawn be distinctly thready-looking it has gone too far, but it need not be discarded on that account, though it is unlikely to produce such good crops. Nurserymen should always be prepared to send their bricks out in a perfectly dry and good condition; but, whether owing to bad storage or not, they are too often quite moist, containing spawn in an active state. I should not like to subject Mushroom spawn to a lower temperature than 40° for any length of time, but would not venture to assign the limit in the ascending scale so long as the bricks were kept dry. That it may be safely subjected to a temperature of 90° or 100°, and kept for years under such circumstances, we can testify from our own experience, and prefer such spawn to new for several reasons, but principally because it produces Mushrooms sooner and of better quality, and at the same time a more abundant crop. Our constant rule is to use the oldest spawn first, and, as it is stored above a flue close to the furnace, it is always as dry and as hard as it can be. That old spawn so preserved is better than new has long been the opinion of many good Mushroom growers, and it is certain it can be preserved only in a dry state, for if the bricks be moist a high temperature only causes the spawn to run into the thread-like stage, when it becomes useless.

Chief Points in Mushroom-house Culture.

These are summed up under three heads, viz., preparation of the fermenting material or stable litter; temperature; and watering. As regards the first, some cultivators are very particular, and will have nothing but the pure horse-droppings, and the saving of these free from straw and litter is part of the daily work of one man in many gardens. Such work is, however, entirely needless. In fact, a bed composed of horse-manure alone is worse to get into good condition than any other, owing to the violence of the fermentation and the difficulty in getting the material as sweet and dry as it should be. Of all materials for Mushroom bed-making nothing is so convenient, and nothing works off so readily as stable litter, long and short, taken just as it comes. The droppings alone, if they get wet before they can be procured, require much attention before they are fit for use; but if mixed with the straw as it comes from the stable there is no difficulty. A few turnings suffice to bring the material into good condition, and the bed is ready for the spawn in a much shorter time. Of course the manure should be prepared under cover, in a cool shed, or some such place, and it should be turned frequently, say, once a week, till the heat is just bearable by the hand, and till it is tolerably chaffy but still moist. A wet bed will never produce a good crop, if it produce anything at all. The manure should be just moist enough to heat, and yet so dry as partly to defy treading or beating with the mallets in making up the beds; this is the most favourable condition for inducing the quick run of the spawn, and in such a case the sooner the bed is spawned the better, provided the temperature be low enough. I am thus far particular in trying to convey my meaning perfectly on this point, for many fail in preparing their Mushroom beds. Next, as to the temperature of the bed, I may just state that the kind of structure used as a Mushroom-house has much to do with this. Cellars or caverns are the best places of all, being little affected by the external temperature; but any structure will do in which the temperature can be maintained steadily at about 55°; it may be allowed to go as high as 60° or as low as 50°, but these figures represent the limit. In a high temperature the Mushrooms are long-legged and of poor substance, and the bed soon gives over bearing; while, if the temperature be too low they come on very slowly, and often go off as fast as they come. If we could by any means keep our beds at 75° for a month after they were spawned, we should not be anxious about spawning till the beds had subsided to that figure; but as the temperature goes down every day after the final treading till it has reached that of the house or thereabouts, the growth of the Mushroom is materially interfered with, for the spawn will not run readily or well in a lower temperature than 75°. I have tested this point over and over again, and always with the same result, viz., a very slow crop or no crop at all. Endeavour, therefore, to get the spawn dibbled in 4 in. deep at least, as soon as the bottom-heat thermometer records 85°, being sure the temperature is on the decline. Afterwards cover the bed thickly with hay or straw to prevent loss of heat, and in about a fortnight later, as a rule, the spawn will be running freely in the bed, and a crop of Mushrooms is then a certainty, if no accident occur. If the spawn have run well, the time to give water is of some importance; a good drenching judiciously given will sometimes bring the Mushrooms through a week or ten days sooner than they would have come. Not a drop of water should be given for three weeks at least after spawning; but if it be then seen that the bed is pretty well run with spawn of a thready texture, and particularly if on the surface of the bed, here and there in the form of embryo Mushrooms, a good watering may be given with water of the same temperature as the bed, and the dose may be repeated three or four times within a week or ten days. This will bring the crop through in quantity, after which water must be given only when it is required to keep the bed tolerably moist.

Mushrooms without Artificial Spawn.

It is not always necessary to use artificially-prepared spawn in Mushroom culture, as natural spawn is often procurable in great quantities in old stable litter heaps and places where it is germinated spontaneously, so to speak. I have often had chance crops from such a source. On one occasion a lot of loose stable litter, which had been laid up in a heap for a month or two, and which was afterwards dug into the ground for the Broccoli crop, produced in September and October quite an abundant crop. On another occasion a pit which was filled up with nothing but the dry straw from the stable yard—the droppings having been previously shaken out of it—and soiled and cropped with Potatoes, produced one of the most enormous crops of Mushrooms we ever saw. They came in clusters as large as peck measures, and continued to come for three months. This was in the month of May, some few years ago, and the straw had been put into the pit in the month of August previous. Spawn of this kind is usually of the very best description, and it is often to be found in litter produced by well-fed horses, if it have been allowed to lie for a while. Usually it is in the dry flaky portions of litter that it is most abundant. They are white and mouldy, like a Mushroom cake, and smell even more strongly of Mushrooms. These flakes may be gathered and stored in the same way as the bricks.

Chef.

Salting Mushroom Beds.—In gathering Mushrooms I never use a knife, but twist the Mushroom round, freeing it from the roots; I do not approve of cutting, as the stem in decaying frequently destroys the small Mushrooms near it. When the beds get exhausted and the supply fails, I give a liberal application of water heated to 120°, in which I put a little salt. This so stimulates the bed that a second crop of Mushrooms, often as good as the first, is the result. —B.

Carter's Green Gage Tomato.—I have grown this Tomato in great quantities this season, although its colour is not liked so well as that of Jackson's Selected (the best with which I am acquainted), it is preferred to that kind; in a salad it is certainly most delicious. Last season I made a selection from Green Gage, not so handsome in shape as that kind, but nearly twice as large and ribbed like the old red variety. If this had the Green Gage globular shape, which is quite its own, I should value it greatly.—R. Gilbert, *Burghley*.

Scarlet Runners for London Gardens.—On my way through Hammersmith the other day I noticed that the out-houses belonging to several cottages were almost entirely hidden by the green foliage and flowers of the Scarlet Runner; and contrasting these places with others that were black and grim-looking, I could not but regret that so few of the inhabitants of London turn to account their small but valuable space in this way. Nothing is more easily accomplished than to cover all available spaces with Scarlet Runners, which, in addition to forming a pleasing and refreshing sight to passers-by, would be a source of pleasure as well as a pecuniary benefit to the occupiers.—S.

Cedrela sinensis.—At a recent meeting of the Académie des Sciences (Paris) Professor Decaisne exhibited a flowering branch of Cedrela sinensis, an exceedingly ornamental hardy tree somewhat resembling Ailantus glandulosus. Being a native of the north of China it is hardy in the climate of London, and it is a gain among hardy trees. The white flowers are small but numerous, and borne in erect panicles often more than 1½ ft. in length.—V.

NOTES OF THE WEEK.

Fruit Trees on Railway Embankments.—Few now-a-days would disagree with "W. N.'s" remarks on this subject in The Garden (see p. 341), but the objection that the fruit would be stolen is still urged, and will probably be urged so long as good fruit is scarce; Wheat and Turnips would be in the same danger if equally scarce. Good hardy fruits should be made as common as any kind of cheap food. In connection with this matter we may repeat what the King said to the Royal gardener at Kew when he reported that the flowers were taken and proposed the closing of the garden—"Plant more."

Dodecatheon integrifolium.—A correspondent writes to us doubting whether the plant figured last week is the true D. integrifolium, which he describes as a much smaller plant, with very small, entire, margined leaves. He says the plant figured is D. splendidum of gardens. It was drawn for us by Miss Emily Austin from a beautiful specimen supplied by Mr. Ware, of Tottenham, Mr Ware and Mr. Perry considering it the true D. integrifolium. As to the beauty of the plant figured, too much can scarcely be said; its dwarf, sturdy habit, handsome and abundant foliage, and richly-coloured flowers, combine to make it by far the handsomest American Cowslip we have seen. It comes true from seed, Mr. Ware having raised a large number of plants in that way.

The Potato Disease in the Midland Counties.—Mr. Tillery, of Welbeck, writes to us as follows:—During the last few days disease has been unmistakably spreading amongst the latest varieties of Potatoes in this locality. On the 4th, 6th, and 8th, the heavy rainfalls amounted to nearly 2 in., and the mean temperature of the air during that period was 58°. The Potato fungus had therefore the moisture requisite for its development, and the temperature was not too cold to check its growth. The great bulk of the Potato crop has been lifted, and very little loss has been reported from the disease up to this date. Many fields, however, of late varieties are still unlifted in this district, and the sooner the tubers are out of the ground the better. Some varieties of red-skinned sorts, with strong, woody haulms, such as the Scarlet Prolific and Red-skinned Flour Ball, are still quite green and growing, and the fungus seems unable to affect their vitality to any extent. These sorts are not, however, good for the table till spring, when other better kinds are over. A seedling variety I have raised here from Wood's Scarlet Prolific has the same property of resisting the disease, but it is a first-rate kind for the table, as regards both flavour and mealiness, when lifted late in the autumn.

Michaelmas Daisies in Covent Garden Market.—These are now being sold like Violets in small bunches in Covent Garden Market, and at the same price, viz., a penny a bunch. The varieties consist of small flowering kinds, which, when neatly arranged and surrounded with Violet leaves, have a pretty effect, especially such kinds as Aster Novæ Angliæ roseus, each of the many-flowered shoots of which form quite a bouquet of itself.

Vine Mildew.—Mr. Thomson, of Clovenfords, writes as follows in the "Gardener" concerning a preparation discovered by Mr. Speed, of Chatsworth, for destroying Vine mildew:—I had a good opportunity when at Chatsworth recently of testing Mr. Speed's specific. Some pot Vines had borne early crops of Grapes, and were infested with mildew. I took the spray-distributor and applied a small portion of the liquid to a leaf that was covered with mildew and it vanished in a moment. I then syringed the leaf, came back in an hour, and examined it with a glass. There was not a trace of the parasite to be seen, though its effects were visible on the leaf. I then tried another, but did not wash the stuff off the leaf as before, and the result was exactly the same. During the three days I was at Chatsworth I repeated the experiment often, always with the same results; and when I left the leaves were still completely free from the parasite, and no way injured by the liquid. I certainly never saw a more successful remedy applied before, and Mr. Speed should either make the remedy known or place it within the reach of Grape growers.

Pampas Grass at Reading.—Travellers by the South Western Railway to Reading cannot just now fail to notice how beautiful the Pampas Grass is in Messrs. Sutton's grounds close to that town. Just within the entrance bordering the road on either side run lines of this Grass in large tussocks, each carrying apparently about fifty spikes of beautiful silvery inflorescence. Seen in this way the effect is greatly superior to that produced by a single plant, charming as even that is when in full beauty. Within the inner grounds much larger numbers of later-flowering plants of this Grass are just pushing up their spikes. That there is a difference as regards the blooming period among different varieties of Pampas has long been imagined, and that fact would seem to be very clearly established in the case under notice.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Michaelmas Daisies continue to rank amongst the prettiest of tall-growing Composites; but the great purplish red flowers of Rudbeckia purpurea still linger on well-established plants, and two or three species of Coreopsis—notably C. grandiflora and the still more beautiful C. lanceolata—are profusely ornamented with their elegantly-cut, golden-rayed, slender-stalked flowers. Late-planted Colchicums are now peeping through the ground, C. speciosum and its various forms being already conspicuous, owing to their waxy-petalled flowers being well elevated on stout stems, each bloom reminding one of the flowers of the Magnolia conspicua, both as respects size and colouring. Few plants are more worthy of care as regards tasteful arrangement than these, and yet few get less attention in that way; we should like to see them planted in tufts on unmown parts of the lawn or wild garden, or in borders and beds on a fresh green carpet of Sedum lydium or Arenaria balearica, in order to prevent mud from soiling their satin-like petals. One of the Sea Thrifts (Armeria cephalotes) is now flowering freely in the form of a dwarf edging; its large silky flowers are borne Allium-like in dense, globose heads on stalks 1 ft. in height. The most graceful of all Sunflowers (Helianthus orgyalis) is still flowering freely, and its golden-rayed flowers are most admirably adapted for grouping with blue and lilac-purple Asters. Liatris scariosa is also still effective, as are Delphiniums of the Belladonna section, while their allies, Aconitum autumnale and A. japonicum, are likewise in good condition on sunny borders. One of the most graceful of all the Bell-flowers is Campanula linifolia and its white variety; and the purple-flowered C. celtidifolia also keeps well in flower. Rosy, purple, and white varieties of Pyrethrum roseum continue to be very pretty, and the dwarf Aster-like lilac-purple-rayed Stenactis speciosa is flowering freely on sunny banks and rockwork, as well as in pots, in some nurseries. Iberis Prouti forms a dense carpet of green leaves and rosy-purple flowers at Tottenham. Rosy, purple, and white forms of the Ivy-leaved Cyclamen are now very beautiful on the margins of wild gardens and on rockwork in Mr. G. F. Wilson's garden at Heatherbank, and also in Mr. Barr's Nursery, where they are flowering very freely on a well-drained bed, although subjected to the drip from overhanging trees. The golden-flowered Linum luteum is very pretty in sunny positions, as are also the different coloured forms of Marvel of Peru. Alstrœmeria purpurea is still effective, the tips of the young autumnal growth being furnished with rosy-purple-spotted flowers, as fresh and almost as beautiful as those borne on the main growths some weeks ago. Commelyna cœlestis and its white form are still in flower, as are also their allies, the purple and white-flowered varieties of Tradescantia virginica. One of the prettiest of all the larger-growing, late-flowering Sedums is S. purpureum, which is now flowering freely at Mr. Ware's, although of course it is not so effective as S. spectabile, which, on warm soils, is one of the most showy of all succulents. In Messrs. E. G. Henderson's Nursery we find Christmas Roses (Helleborus maximus) throwing up their purple-stained, creamy-white flowers on stout, spotted stems. The double scarlet-flowered Potentilla yet furnishes a few of its brilliant blossoms, which in form resemble a semi-double wild Rose, while in colour they are perhaps the most brilliant of all late autumn flowers. Dahlias, Tritonia aurea, Tritoma Uvaria, T. Macowani, and a free-flowering form named T. floribunda are still very effective when grouped with Pompone and other Dahlias. Anemones of the A. japonica and A. vitifolia types are also very beautiful, and furnish plenty of flowers and buds for the decoration of vases. Tall Phloxes and Gladioli are also effective in sunny positions on deep cool soils, and different varieties of Antirrhinums are likewise producing richly-tinted flowers on secondary or late summer growth. Several kinds of Horn Poppy are beautifully furnished with large yellow flowers, and their glaucous leaves are so distinct that they well deserve a sheltered position even as fine-foliaged plants. Late-sown Stocks and Mignonette are also showy on warm borders. Our woodcut illustrations this week represent in some cases flowers that bloom naturally earlier in the season, but they are now in flower.

Dwarf Everlasting
(Helichrysum bracteatum nanum).

Rosy-flowered Wood Sorrel
(Oxalis rosea).

Double-flowered Purslane (Portulaca grandiflora fl.-pl.).

Christmas Daisy
(Aster grandiflorus).

Sunflower
(Helianthus annuus simplex).

Drooping-leaved Yucca (Y. recurvifolia).

White Water Lily
(Nymphæa alba).

Nettle-tree-leaved Hairbell
(Campanula celtidifolia).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

PLANTING AN ORCHARD.

In preparing the holes preparatory to planting the trees, one can only reiterate that which has often before been quoted, viz., make but one hole—in other words, mellow the soil so deeply that the size of the hole itself will be a matter of small moment. The depth of the hole is, however, of some importance; in my opinion it should not be too deep, but merely sufficient to allow the tree to stand at the proper depth. Tap roots will work their way down almost in spite of all obstructions, but the delicate fibres and small roots that provide the nourishment should have light mellow earth in which to ramble. This is a common sense view of the subject, and it is borne out in practice. Deep holes not unfrequently serve as receptacles for holding water, especially in clayey soils; and when planters fill in the bottom with stones, no benefit of course is derived therefrom, as the accumulated water has no vent. In soils retentive of moisture, trees should be planted even more shallow than they usually are; but in all cases it is a good rule to bear in mind that trees should always be set shallow. Concerning the selection of trees, planters differ. Most prefer small trees, but success is often attained with trees of large size. There is this difference: a person to succeed with large specimens must first thoroughly understand the nature and requirements of his trees, and be versed in his work, otherwise he will fail; but the merest novice, with small trees, under ordinary circumstances, will not have many to replace. In respect to the selection of nursery trees, I prefer Apples three, or, at the furthest, four years of age; Pears, two or three years; Plums and Cherries, two years; and Peaches, one year. These should all be strong and healthy, which is shown not only by the size of the previous year's growth, but by the peculiar glossy appearance of the bark. A tree that has been unduly stimulated and forced into making a remarkably strong growth, is not so valuable as one of small size with healthy, ripened wood; and the latter, in the majority of instances, will come into fruiting in advance of its more successful competitor. The Grass question, in its application to orchard culture, is one over which there has been much disagreement among practical men; but I doubt if the most strenuous advocate of seeding down to Grass would recommend the practice as soon as the trees are planted. The proper plan is to cultivate carefully for a few years until the trees have become well established, and then allow a turf to form, depending afterwards upon top-dressings. S.

Madresfield Court Muscat Grape.—This Grape appears to be a very uncertain variety; it was said to be a late Grape, but as such it has failed in many places to give satisfaction. I am, however, of opinion that soil has a great deal to do with its success or failure, other things being equal. The best sample of it which I have yet seen is in a late Vinery at Bolton Hall, near Bedale, where one rod is carrying sixteen bunches of fine fruit, in which there are no signs of cracking, which is its usual fault. Mr. Roberts, the gardener at Bolton, tells me that it invariably succeeds well with him, better even than other Vines in the same house, consisting of Lady Downes, Alicante, and Barbarossa. The border in which it is growing is all inside, and is made up of loam off the carboniferous limestone, bones, brick rubbish, and a good sprinkling of charred garden refuse.—H. J. C. Grimston, *Tadcaster.*

Fungous Growth on Living Plants.—Fungi commonly affect dead or dying vegetation, feeding on the decomposing tissues, and deriving therefrom their sustenance and support. Certain of these minuter organisms, however, are found to feed, in like manner, on living vegetation. On the coast cliffs, at Bridlington, I notice, very abundantly just now, the Coleosporium Petasitis, which completely covers the under side of the leaves of the Butterbur, with its clusters of orange-red spores. Indeed, the leaves of this plant are often golden with this parasite Fungus, which spreads rapidly till it covers the entire under surface. The Fungus is autumnal in its growth, and as it passes from leaf to leaf, the whole plant curls and turns to the sun the under surface of its leaves, that gleam again with golden light. Another of these vegetable parasites may be seen on the stems of the Shepherd's Purse (Capsella Bursa-pastoris), which it encircles with patches of its snow-white spores. This is called the Cystopus candidus, and it affects many of our living Crucifers besides the Shepherd's Purse, on which it is most commonly found. The recent rains have served so to educe and foster this parasite that it creeps away from the stem to the seed-capsules, clothing them also with its white rust. This is common just now in the Turnip fields at Bridlington, and may be noticed by the most careless observer.—Peter Inchbald, *Bridlington Quay.*

A Giant Radish.—Mr. Blondel has raised at Bolbec, in France, a black Spanish Radish which measures 3 ft. long without the leaves.—D. Gwihneuf.

NEW PLANTS, &c.

Lilium Philippinense.—This plant is a native of the Philippine Islands, where it was discovered by Mr. Wallis, who sent it to Messrs. Veitch, with whom it flowered in 1873. The mountains of the Philippines reach a height of 10,000 ft., but whether this plant is found at such an altitude, and will prove hardy, remains to be proved. Its flowers, which are solitary, are borne on slender stems about 2 ft. in height, the flowers themselves being 10 in. or 12 in. in length, pure white in colour, and singularly tubular or funnel-shaped. Botanically it is interesting, as showing the extreme development of the peculiarities that mark the Eulirion type. Even if it should not be hardy, it is well worth pot culture as the dwarfest, narrowest-leaved, and longest-flowered species in the L. longiflorum group.—"Botanical Magazine," t. 6250.

Lycaste lasioglossa.—A curious but far from showy species, bearing large, solitary, brownish-green flowers, the lip and petals being of a bright yellow colour. The habit is that of L. Skinneri, like which it is a native of Guatemala.—"Botanical Magazine," t. 6251.

Begonia Davisi.—A dwarf, free-flowering, Peruvian plant, belonging to the B. Veitchi or tuberous-rooted section. It is one of Mr. Davis's discoveries, and was by him sent to his employers, Messrs. Veitch & Sons, who recently exhibited it before the Royal Horticultural Society. It forms dense tufts of purplish-green, hairy leaves, the vivid orange-scarlet flowers being borne on three-flowered scapes 4 in. to 6 in. in height; one of the most showy and desirable species in the genus. It must not be confounded with a tall-growing, pink-flowered plant grown at Kew and elsewhere as B. Davisi.—"Botanical Magazine," t. 6252.; "Floral Magazine," t. 229.

Dracæna fruticosa.—A tall-growing, green-leaved, Indian species, of no especial merit as a decorative plant. It attains a height of from 10 ft. to 15 ft., the stem being clothed with lance-shaped leaves 1 ft. or more in length. Flowers small greenish-white, borne in large panicles on the old plants.—"Botanical Magazine," t. 6253.

Oncidium stramineum.—A small-growing Mexican plant, having fleshy, oblong leaves, without pseudo-bulbs, and bearing dense, drooping panicles of creamy-yellow-lipped flowers about ½ in. in diameter. It is interesting as the smallest species belonging to the O. Cavendishi, or non-pseudo-bulbous group, but is of no especial value as a decorative plant. The leaves and panicles are about 6 in. or 8 in. in length.—"Botanical Magazine," t. 6254.

Kentia gracilis.—This is a new Caledonian species, which in its slender habit of growth rivals Cocos Weddelliana and its ally Geonoma gracilis, but this plant has the advantage of being easily cultivated in a warm greenhouse, while those just alluded to require stove-heat. For decorative purposes or as a table plant it is a decided acquisition to an already attractive and useful section of Palms.—"L'Illustration Horticole," t. 245.

Aralia Veitchi var. gracillima.—A slender-growing form of a now well-known and very elegant stove shrub. The digitate foliage is of a greyish-green, that with a red mid-rib, and the divisions are much narrower than in the type. It well deserves careful culture as a table plant, and is easily propagated by grafting on A. reticulata as a stock.—"L'Illustration Horticole," t. 247.

Marattia attenuata.—A stately-habited Fern, only suitable for large conservatories or Ferneries. It bears tripinnate, dark green fronds, the stipes being prettily zoned with brown.—"L'Illustration Horticole," t. 246.

Cattleya Carrierei.—In general appearance this plant closely resembles a small-flowered variety of C. grandis, the colours being nearly exactly similar. The sepals and petals are of a delicate lilac tint, the large lip having a blotch of yellow in the throat and suffused with crimson at the apex, and blotches of dark crimson extend along the disc nearly to the base of the lip. It is said to be a native of Brazil, and to have a vigorous habit.—"Revue Horticole," p. 350.

Serapias papilionaceo-lingua.—This remarkable and showy Orchid is presumably a natural hybrid between S. lingua and Orchis papilionacea, having been found in considerable abundance in various localities in Southern France growing in company with those plants and Serapias longipetala, a species closely allied to S. lingua. The plant grows 1 ft. or more in height, bearing a spike of flowers 1 in. or more in length. The free sepals and petals are rosy, tipped with green, the lip being of a rich purple colour and nearly 1 in. broad.—"Botanical Magazine," t. 6255.

THE FLOWER GARDEN.

BEDDING CALCEOLARIAS.

In the summer decoration of flower gardens, Calceolarias, when in good condition, are as yet unrivalled amongst yellow flowering plants, and as the manner in which they are wintered has an important bearing on the following season's display, a few remarks on the method by which good plants may be secured, may not be inappropriate at this, their best season of propagation. I am no advocate of fixed dates for any special operation, for seasons and localities necessarily interfere with such, and cultivators should in all cases be guided by their own experience, but here the beginning of October is quite early enough for getting in the principal batch of this useful plant, and our mode of proceeding is as follows:—An ordinary garden frame, two or three lights long, is set on a solid bed of coal ashes, in a position sheltered from the north and east, but fully open to the south; in this is put about 4 in. of soil similar to that used for Melons, sifted moderately fine, and pressed down quite firm and level, finishing off with ½ in. of coarse sand; then it is well watered to settle the soil firmly, and healthy-growing shoots for cuttings that have not produced flower are inserted as speedily as possible in rows 3 in. apart each way; the lights are then shut close, and shaded during bright sunshine, but the lights are removed entirely at night to prevent flagging, and as soon as they will bear exposure without suffering in any way the lights are removed altogether, except during heavy rain or frosty nights. We never put the lights on until the thermometer gets close down to the freezing point, but as soon as there is danger of severe frost the frames should be well protected on both the sides and top with Fern, mats, or litter, removing them as soon as the thermometer rises again, as the less they are coddled the better for the health and vigour of the plants, but in very severe or protracted frosts they will receive no injury if covered up for a week or ten days in mid-winter, when they should be at rest, and when growth is positively injurious to their future progress; but as the days begin to lengthen and solar heat increases the growth will soon become rapid, and they must on no account be allowed to suffer from drought. In February they will require stopping by pinching out the points, leaving two pairs of leaves, from the base of which four strong shoots will soon extend, which must likewise be stopped as soon as they are of sufficient length. By the end of March they will be dwarf, sturdy bushes, requiring more space for top growth, and the soil will be a perfect mat of roots. If the beds intended for their reception have been duly prepared by deep cultivation and are unoccupied by spring flowers, they should be planted out at once, when they will become thoroughly established before dry, hot weather sets in. Temporary protection must, of course, be provided, evergreen branches being the best material for defending them from the wind, which is more to be guarded against than frost; for, although a few degrees will kill plants that have been drawn up in warm structures, they will not affect those that have been treated as above described. The beds should have a good deep mulching of rotten manure, leaf-mould, or Cocoa-fibre in May, in order to retain the moisture in the soil. With us, in the beds the Calceolarias are the first to be effective, and the last to be cleared off. Where spring gardening prevents such early planting as above mentioned, the only remedy is to transplant into temporary pits prepared in the same way as for cuttings. The benefit of confining the roots to a moderate depth of soil by means of a coal-ash foundation will be fully apparent at the time of removal, for if the soil be moderately adhesive and full of roots, the whole of it will remove in square blocks if cut down between the rows, and the plants will scarcely experience any check, but start into vigorous growth immediately.

Henham. James Groom.

AN EVER-BLOOMING IRIS.

(I. RUTHENICA).

This somewhat rare but really beautiful plant has been in flower for several weeks past in Mr. Barr's Nursery at Tooting, where it is regarded as one of the most interesting of all autumnal flowers. Its blossoms, which are produced singly, closely resemble those of Iris (Xiphion) reticulata in size, structure, and odour, but the colour of the broad, full petals is rich purplish-blue and white, instead of purplish-blue and orange or golden yellow. The habit of the plant is, however, very different from that of I. reticulata, the flowers being borne at the base of fan-like tufts of fresh green Grass-like foliage, which springs from a rhizomatous root-stock. This Iris has been figured in the "Botanical Magazine," t. 1123 and 1393, and also in Reichenbach's "Exotic Plants," t. 39. Mr. J. G. Baker informs us that its normal time of flowering is May and June, that is, of course, in its native country; but Mr. Williams, of Ormskirk, states (see p. 355) that, with him, it blooms during nearly every month of the year, though mostly in the autumn, adding that it is "a gem among Irises," and that, owing to the blooms being hidden among the foliage, ordinary observers are unaware of its being in blossom at all. The accompanying illustration represent a flower and the lower part of a small plant (natural size). Of the beauty of the flowers, some idea may be gleaned from the woodcut; and they are additionally interesting as forming a link between the late summer-flowering varieties of I. barbata, or late planted bulbous Irises, and the lovely blue Iris (Xiphion) Histrio, which not unfrequently shows its brilliantly-tinted blossoms above the snows of January and February, these being succeeded by the pale lilac flowers of I. stylosa, and the early-blooming forms of I. pumila.

An Ever-blooming Iris (I. ruthenica).

F. W. B.

AUTUMN FLOWERS.

The mild, showery weather, and occasional bright, sunny days of the last three weeks have done much to revive the gardens in these chalky chiens, which in consequence of the burning heats of July and the early part of August, and the unnaturally cold weather which followed, present a very melancholy spectacle. Mentzelia ornata has just begun to open its magnificent blooms, almost equalling a Magnolia in size; they look as if they were made of white satin, and have a crowd of delicate yellow stamens in the centre. With me the plant has grown into a stout, compact little bush, some 2 ft. high,

and is crowded with buds on every shoot; I fear, however, that the season is too far advanced for many of them to expand. We all owe Mr. Thompson, of Ipswich, a deep debt of gratitude for having re-introduced this grand plant. The little single Dahlias—D. aurantiaca, lutea, coccinea, Cervantesi, glabrata, and Zimpani (Cosmos atropurpureus) are in full bloom, and nothing looks brighter or more effective for table decoration. Aster amygdalinus, with its umbels of silvery-white flowers, and A. Novæ Angliæ roseus, with its bunches of rosy-red, are very beautiful, but almost equalled by the mauve and white clusters of A. versicolor, and the dense, rich purple heads of A. bessarabicus. In the purple section A. sericeus and A. tortifolius promise well, but my plants are only seedlings, and will not come to perfection till next year. Phytolacca purpurea is most effective both in bloom and berry, and Œnothera macrocarpa and Lamarckiana are covered with their large yellow flowers at night. Colchicum speciosum, lætum, byzantinum, autumnale, album, roseum, and striatum have been finer than ever I saw them; C. arenarium promises to be a very effective and floriferous little species, but I have only a single bulb at present. Crocus speciosus and nudiflorus are in full beauty, and C. Kotschyanus, hadriaticus, pulchellus, pulchellus albus, and Cilicicus are in bloom, whilst C. longiflorus, ochroleucus, Cartwrightianus, sativus, medius, damascenus, byzantinus, lævigatus, and Orphanidis are peeping above ground; C. melitensis, Clusii, serotinus, and Boryi have not yet shown their heads above ground. Fuchsia cordifolia is now a mass of bloom; it stands the winter very well with a little protection. Arctotis grandiflora, with its silvery leaves and large, Gazania-like flowers, and the pretty floriferous-yellow Composite Asteriscus maritimus are very effective. Echeandia terniflora, like a yellow Anthericum, has been in bloom in the open border for two months, but I shall not venture to leave it out during the winter. Gladiolus purpureo-auratus still keeps opening its curious yellow and purple bells, and G. Saundersi and G. dracocephalus have just passed away. G. cruentus is throwing up strong spikes, and will, I hope, be able to expand before the frost comes. Kniphofia Macowani keeps throwing up its neat little spikes, and is one of the best of the genus. The great white stars of Pyrethrum uliginosum are unusually fine this autumn, and Mr. Thompson's Gazania amblyodon seems to be an almost everlasting bloomer. Brugmansia sanguinea and Exogonium Purga are full of buds, but will not, I fear, have time to expand them. H. Harpur Crewe.

Drayton-Beauchamp Rectory, Tring.

Tuberoses Out-of-doors.—I have been pleased and surprised to learn that the Tuberose does so well out-of-doors near London. As the soil of the Hale Farm Nurseries is, though a good one, somewhat cold and stiff, better results might be looked for on more favourable soils. Perhaps Mr. Ware or Mr. Perry would kindly tell us what they know of the growth of the plant in the open air, and if they consider the bloom good and early enough to warrant the general culture of the plant in the open ground in the south of England. I say early enough, not because the flowers are not welcome late as well as early, but because flowers opening very late in the open air are so much at the mercy of frosts and cold rains. —V.

A Plant for the Wild Garden.—Much having been lately written concerning the wild garden and its suitable occupants, I venture to suggest Lathyrus pyrenaicus as an addition to the list. Most cultivators of flowers are aware of the rambling habits of the greater number of plants of the Leguminous tribe, but in that particular L. pyrenaicus eclipses them all. It produces an immense quantity of bright orange-coloured blossoms, but the principal difficulty connected with its thorough development is the selection of an appropriate place for it, for a well-established plant of this species will ramble over, and by its density of growth prevent every plant and shrub that comes within its reach from thriving; indeed, it is a greater rambler than the Hop, the Bindweed, or the Bryony, and is decidedly more handsome. Tying up or training such a plant is out of the question; but there are many rough places in the wild garden where it would be quite at home and form an attractive feature.—Thos. Williams, *Ormskirk.*

Errors in Planting Herbaceous Borders.—Referring to "J. S. W.'s" notes on these I should like to add a few words of caution. Now that hardy flowers are again becoming popular, much will depend on the way that the mixed border is arranged. I have long paid some attention to the subject, and venture to say that most danger lies in the following points:—In repeating favourite plants at intervals along the border instead of planting sufficient numbers of them in one or a few positions; in planting rows of any common bedding plants along the front margin of the borders (there are many dwarf plants suitable for adorning the margins of the borders without using a single half-hardy or bedding plant); in planting coarse, weedy species, affording little beauty themselves, yet exhausting the fertility of the border, and overrunning the choicer kinds; in planting single tufts instead of bold groups or patches; in planting too many kinds in one spot, confusing the eye, and producing that spotty monotonous effect, which years ago led to the neglect, and almost the extermination of hardy flowers.—U.

The Herbaceous Coral Plant (Erythrina herbacea).—To what is stated respecting this plant (see p. 54) I would add that it it a plant which should be grown by everybody, for should it not prove quite hardy it could be wintered like Cannas, Dahlias, or Gladioli. It does not require to be started in heat in spring, but merely to be planted out-of-doors; as a sea-side plant it will prove invaluable. I saw it growing in profusion in the Island of Galveston in the Gulf Mexico, in the salt sand, where it was often washed by the sea. It is highly ornamental when in bloom, and not less so when in fruit, when the pods open and display their brilliantly-coloured orange-scarlet Beans.—Wm. Falconer, *Botanic Gardens, Cambridge, Mass.*

Medicago elegans.—This elegant plant does not appear to be very much known. It prefers a dry, gravelly soil, is perfectly hardy, and considering its delicate habit may be said to be a very free grower. A single plant will in a season cover 12 superficial ft. with a carpet of a lovely light green ground, with hundreds of lemon-coloured flowers rising just above the foliage; wherever planted it should have plenty of room, and the roots are long, tough, and vigorous. For mounds, rock-work on a large scale, or precipitous, stony banks, it will be found a perfect gem, and is one of those plants, however extensive may be the collection, that is certain to attract notice.—T. Williams, *Ormskirk.*

Virginian Creeper for Shading Glass Houses.—In a villa garden in the neighbourhood of Kew I noticed the other day a novel as well as useful mode of shading glass structures during the summer months. The house in question has a circular roof, glass front, with a wall at the back. Outside, at one end, is growing a fine vigorous Virginian Creeper, a strong shoot of which is trained along the wall, in a line with the roof, the whole length of the house. From this shoot or main rod other shoots are produced, about 1 ft. apart, which are trained perpendicularly down the roof to the front of the house. B this simple means an excellent natural shade is secured without the obstruction of so much light, as in the case of most shading material. When the foliage dies off in the autumn, the shoots can be cut back to within a few eyes of the main rod, and will start again into growth in the spring just at the time when shading is becoming necessary. This kind of shading is well worthy of adoption, on account of its handsome appearance, cheapness, and durability.—S.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Monardella macrantha.—This charming little plant is a native of California, and a perennial. It grows from 4 in. to 6 in. high, has numerous thick, ovate, obtuse leaves ¾ in. long, and slightly fragrant orange-scarlet blooms that forcibly remind one of those of Scutellaria Mocciniana. Our specimens raised from seed last spring were planted out in a very dry situation; still they have done well, and have bloomed abundantly and continuously, and I feel convinced that under favourable treatment this little plant would be strikingly effective.—W. F.

Lobelia pumila magnifica.—With me this fine new Lobelia has proved quite a success, having fully realised the description given of it when first sent out. It is deep blue in colour, and very compact in habit; in short, I consider it the best blue Lobelia in cultivation. In order to have it true, it must be propagated by means of cuttings, as no dependence can be placed on seedlings. —R. Greenfield, *Priory Gardens.*

The Clethra-like Loose-strife (Lysimachia clethroides) is without doubt a very graceful and distinct plant, which I was glad to see described in the last number of The Garden. I saw it at Kew in the summer, and though it suffered from drought on the dry soil there, it was withal very beautiful. If free enough for the wild garden it will add a novel charm to that attractive phase of gardening; meanwhile lovers of hardy flowers would do well to secure it in adding to their collections.—V.

Smith's Wood Sorrel.—We have been greatly charmed lately with the beauty of Oxalis Smithi. It is growing at the foot of an east wall at Kew, and, when the sun shines, expanding a multitude of delicately pink flowers, no prettier sight can be imagined. This is a Cape species, and is quite hardy in its present position. It grows about 6 in. high, the flowers are of large size, and it may be considered one of the most select and desirable of the genus.—"Gardeners' Chronicle."

The Double Arrow-head.—Is it certain that this plant figured well in the last number of The Garden is a double form of our native plant? Some years ago I saw the plant in quantity in the Rye House garden at Broxbourne, and it seemed distinct from our native plant of which there is no doubt a double form. I have forgotten the points of difference that caused me to think them distinct plants, when I had both under my eye every day. I grew this fine double form in an artificial bog, where it formed white tubers as large as pigeons' eggs. These where torn up and devoured with great avidity by ducks in autumn, and in that way I lost my plants.—U.

THE INDOOR GARDEN.

GRIFFINIAS AND THEIR CULTURE.

These consist of some half-a-dozen species, all evergreen, South American Amaryllids, compact in habit, and possessing a remarkably free-blooming disposition. They are very distinct and beautiful, the flower-stems springing from the centre of the bulbs, rising well above the foliage, terminating in a large umbel of delicate blue and white or purple and white flowers, in shape not unlike the blue Agapanthus. There are no bulbous plants that better deserve a place in even the most select collection of stove subjects than these. They are at all times handsome, and when strong specimens are in flower they continue to open their blooms in succession for two months, and are equally suitable for conservatory decoration or for cutting; for the latter purpose they have few equals, the colour (always scarce except in flowers of diminutive size) particularly adapting them for arranging with others of paler or more vivid hues; their substance also enables them to retain their freshness for days in water, or in any moisture-holding material. The plants likewise have the merit of being easily grown, and can be cultivated successfully by those who have not the means of growing a number of subjects requiring a very high temperature. An intermediate heat, such as a Vinery where a little fire is used will answer for them quite as well as a warmer situation, but they should never, except in warm weather, be subjected for a long time to a greenhouse temperature, even when they have completed their growth and the plants are at rest, or they are liable to suffer. The only drawback to their more general cultivation is their scarcity, consequent upon their slow habit of growth, still further aggravated by the mistaken treatment they often receive by keeping them quite dry when at rest, than which nothing can be more injurious to any evergreen bulb when carried too far, and especially with Griffinias; like the Eucharis amazonica, Griffinias cannot be grown and periodically rested, so as to induce their flowering several times in the year; on the contrary, they prefer a long season to become fully developed, and want a long rest afterwards before flowering, during which the soil should be kept much drier than when growing, but should never be so dry as to cause the leaves to flag. Another reason why these plants are scarce is, that so few succeed in raising them from seeds, the failure in which operation can fairly be attributed to their being covered with soil, whereas they should be allowed to remain on the surface of the soil in the pots, otherwise they will decay. Griffinias can also be increased by separation of those bulbs that are produced as offsets in the same manner as with Amaryllis, but their progress is very slow, and the roots are so closely interwoven as to render their separation almost impossible without considerable mutilation. When they are to be divided, the ball should be turned out of the pot and the whole of the soil washed very carefully from amongst the roots, by which means they may be more readily disentangled without so much breakage; they should then be placed singly in from 4-in. to 6-in. pots, according to the size of the bulbs, and treated as hereafter described for plants raised from seed. After blooming in summer and autumn the seeds make their appearance, growing to the size of Potato Apples, but in appearance more like small, green, unripe Tomatoes, being corrugated and irregular in shape. They must be allowed to remain on the plants until they either fall off of their own accord, or can be removed by very slight pressure, and should then be sown immediately. For this purpose use an ordinary seed-pan proportionate in size to the number of seeds; put 1 in. of drainage in the bottom, and on this a little Sphagnum, or turfy matter from the soil, which should consist of good yellow loam, with about one-sixth of sand added; the loam should not be sifted even for the seeds, but pulled into small pieces and pressed moderately close, sprinkling a little sand on the top and giving the whole a good watering; on this lay the seeds, pressing them gently into the surface, so as to imbibe the moisture from the soil, which must be kept continually damp; set them in a temperature of 55° at night with a few degrees higher during the day, and so treated they will, in the course of two or three months, vegetate. They should not be disturbed till the protruding root has descended into and got a firm hold of the soil, during which time a leaf will be formed to each seed. This will usually occupy the whole of the winter and spring after they are sown, during which time the soil must be kept moderately moist, after which they should be transferred singly into 3-in. pots well drained, using soil similar to that in which they were sown. Through the spring the temperature should be gradually raised, and during the summer it may range in the night from 60° to 70°, and 10° or 15° higher in the daytime with sun-heat. Keep the plants well up to the light, giving a slight shade in the middle of the day in bright weather, admitting a moderate quantity of air, closing the house early, and slightly damping them overhead at the same time; reduce the temperature in the autumn to 55°, at which point they may be kept during the winter, at the same time giving as much water as will just preserve the soil slightly moist. Give the young plants as long a season of growth as possible, by placing them about the middle of February in a temperature of 60°, giving a little moisture to the soil as soon as they show signs of growing; increase the temperature both by day and night as the weather gets warmer, shading slightly as before, and syringing a little when the house is closed in the afternoons; by Midsummer they will most likely have so far filled their pots with roots as to require moving into others of a larger size, now having the soil a little more lumpy, and not omitting to use enough sand to keep it quite sweet; after this treat the plants through the autumn and winter as recommended for the preceding season, again starting them early; or, if there be the convenience of a house that is kept 5° warmer through the winter from the first than the temperature prescribed, they may with advantage remain in it, by which means they will make more progress. If the growth be satisfactory the strongest plants will most probably flower in the autumn, three years from the time the seeds were sown, although the bloom-spikes will not be nearly so strong as when the bulbs get fully grown, which will very likely occupy another two years, when they will increase by throwing up offshoots. After flowering each autumn they will make their growth, during which time they should be kept at about the same temperature as that already recommended, supplying them liberally with water until the growth is finished, which will be apparent by the leaves attaining their full size and solidity. When the plants have begun to bloom it will to some extent alter the time of their growth, retarding it considerably, so that it may not be completed before March, after which the soil should be maintained as already described in a slightly moist state. During the summer the increase of solar heat and higher temperature necessary for the other occupants of the house will cause them to push up their bloom-stems, the flowers opening through the autumn. Each year after flowering they should have larger pots, as necessitated by their growth in the first stages; and until they have begun to increase freely by offsets, 1 in. shift at a time will in most cases be enough, as they must never be overpotted, although as the specimens get large they will make an abundance of roots and fine leaves requiring proportionate pot-room, while the flowers also will be proportionately strong. When the plants get to their full size it will not be necessary to pot them every year. A very imperfect estimate can be formed of the beauty of Griffinias whilst they are in a comparatively small state with one or two flower-spikes as compared with large specimens that will produce from a dozen to thirty, each proportionately larger than those borne by smaller plants. They may be grown on until they fill 18-in. or 20-in. pots, or be divided as already described. Those who are fortunate enough to possess a good stock of these valuable plants will do well to grow both small and large specimens. When in flower they may be placed for several weeks in a conservatory somewhat warmer than an ordinary greenhouse, but they should not remain too long, especially if the autumn be far advanced and the weather getting cold, as they will be commencing growth which would get checked, and thus materially interfere with their progress during the ensuing season.

The undermentioned may be procured, and if treated in accordance with the above directions, will be found an accept-

able addition to any collection of plants:—G. hyacinthina is a large and fine species with bluish-violet flowers, each petal having a white stripe from the base down the centre for a considerable portion of its length; a fine specimen will bloom through the whole of the latter part of the year. It was introduced from South America. G. blumenavia, a smaller-growing species from Brazil, flowers a little earlier in the season than the preceding. G. ornata, a new introduction from Rio de Janeiro, with large heads of purplish-lilac flowers fading off to white, is a very free bloomer, sometimes producing two scapes from a single bulb; it flowers in the autumn or winter. When aphides affect the young leaves and flower-scapes, they may be destroyed by fumigation and sponging. Thrips also attack the under sides of the leaves, and should be either cleaned off by a sponge dipped in Tobacco-water, or fumigated. Brown scale and mealy bug will also affect them; these can be best removed by sponging. T. Baines.

SOLANUM CAPSICASTRUM IN POTS.

There is a diversity of opinion as to the best method of growing this useful winter decorative plant, some being in favour of planting it out in May, and lifting it in September or October, while others advocate that the plants should be confined entirely to pots, and plunged in a bed of coal ashes. After trying both plans I must say that the latter seemed to secure the most vigorous development of the plants, for with these, as with all our decorative subjects, the primary aim is to get a maximum-sized plant in the smallest pot that will retain it in robust health. When the size of pot used is not important, large specimens may be grown with rather less trouble by planting out, but well-formed plants that will retain their foliage down to the rim of the pot, and be aglow with brilliant berries, are worth all the extra labour they entail. The plan I should recommend is to sow the seed in February, and as soon as the plants are large enough pot them off into single pots and grow them on in frames close to the glass, with a gentle bottom-heat. In order to secure a dwarf, well-shaped plant, the leading shoot must be pinched out, and the side shoots tied down to the rim of the pot to form the basis of the future plant, but they should not be stopped too late in the season, or the berries will not ripen. Confine them to 48-sized pots the first season; if a sufficient number of old plants have been retained and cut down for the largest specimens they make the best plants the second year. About the beginning of March (bulbs and flowering plants being usually plentiful for decoration) berry-bearing plants are not much in request; therefore Solanums should be removed to a cool house, and kept rather dry for a few days before cutting them down close to the rim of the pot, retaining the outline of the plant intact. In a medium temperature they will speedily start into a sturdy growth which must be kept clean by fumigating and syringing; they should then be shaken out and placed into the pots which they are intended to occupy, a 6-in. or 7-in. pot being large enough to produce very fine plants. When fairly started into growth the points of the shoots should be pinched out, when they will break into a well-formed head of shoots, which should not be stopped later than May, gradually inuring the plants to a minimum temperature, and by the end of the month they should be plunged in a bed of coal ashes in a well-sheltered, sunny position, leaving space sufficient for a free circulation of air at all times. As they are strong-rooting, gross-feeding subjects, they must be copiously supplied with water; and when grown in pots, the rate of growth may be regulated by the supply of weak manure and soot-water in greater or lesser proportions. The pots should be occasionally lifted or turned round, so that the roots may not penetrate the subsoil. A good syringing after hot days will encourage a clean growth, but out-of-doors they are seldom subject to insect plagues. By the end of September they should be models of healthy development, clothed with dense green foliage down to the pot, and forming striking objects when thickly studded with brilliant berries. The only training they require is to support any heavily-laden branch in its proper place, but the less interference in the way of training after the basis of the plant is formed the better. From October to March they are very effective for conservatory decoration as single vase plants, or mixed in large groups for indoor decoration. There are several improved varieties on the old type of S. capsicastrum, such as Wetherill's Hybrids and Solanum capsicastrum compactum; and in effective contrast to the above the yellow-berried Solanums, such as Prince of Wales and Yellow Gem, are very effective, but require different treatment, and do not last so long as the scarlet-berried varieties. James Groom.

Henham.

INDOOR PLANTS AT THE ANERLEY NURSERY.

This nursery is remarkable, among other things, for the extensive collection of plants suitable for town-house decoration which it contains. Whole houses are devoted to the culture of young cross-bred Dracænas, and among other plants grown here for indoor ornamentation are numbers of bright green Maiden-hair Ferns and Selaginella hortensis, all in small pots, which are, however, completely hidden by the luxuriant growth acquired in a moist and moderately cool atmosphere. With plants such as these Mr. Wills has filled several houses, and they are always ready for use either indoors temporarily, or in conservatories, Ferneries, or rock-work permanently. Among Adiantums grown here we observed healthy examples of A. cuneatum, which, for general purposes, is perhaps the most useful. A. gracillima is also doing well together, with A. decorum, A. Farleyense, A. assimile, A. concinnum, and its variety A. concinnum latum. The gracefully drooping A. caudatum also does well, and produces strong young plants freely from the ends of its pinnate fronds. Among Ferns of a rarer character we noted an excellent stock of Gleichenias, perhaps the most delicately beautiful of all Ferns. Large quantities of Onychium japonicum are raised for cutting, being quite as useful for that purpose as Adiantum cuneatum, and it is quite distinct in form. Pteris leptophylla, P. serrulata, and P. serrulata cristata major are also grown for the sake of variety, the splendidly crested fronds of the last-named kind being especially useful for large vases associated with Gladioli and other flowers of that description. Cyperus alternifolius and C. laxus are likewise useful for indoor work; as is also Ficus elastica, which is propagated extensively from single eyes, each having a leaf attached to it. F. macrophylla, F. Chauvieri, and a narrow-leaved variety called F. longifolia, are other forms of Ficus not usually met with in private gardens, which are found to be valuable for ordinary decorative purposes. Specimen plants of the best varieties of Crotons, Dracænas, and other fine-foliaged stove plants for exhibition, are all highly coloured, and otherwise in excellent condition. Among plants grown here not generally met with even in the best private gardens, may be mentioned Grevillea Fosteriana, an elegant Protead with slender, erect stems, clothed with pinnate leaves, covered with soft, silky hairs; Cupania filicifolia, another graceful plant with finely-divided umbellifer-like foliage, distinct and effective for table decoration; and one of the most noble of all Araliads—Aralia pulcher, also finds a place here, and well deserves a good position in every conservatory in which it can fully develop its large and polished digitate leaves. A year or two ago this plant might have been seen used with excellent effect in the Parc Monceau, and it has also been employed in our own public parks with good results. The side-shoots produced by plants of this which have been headed down root tolerably well in a genial bottom-heat. Harania palmata, a dark green fine-foliaged plant with glossy, trilobed leaves, is a favourite in this establishment, and ought to be more generally grown than it is as a table plant, as should also the pretty little Reidia glaucescens, one of the most singularly beautiful of all Euphorbiaceous plants. Among the Aralias grown here for table decoration we noted healthy symmetrical little specimens of A. Veitchi, A. Veitchi gracillima, A. reticulata, A. leptophylla, and A. elegantissima. These are all beautiful plants, not so often met with in private gardens as they should be, probably owing in some measure to the difficulties which attend their propagation from cuttings. The easiest and best way of propagating such plants is to graft them on free-rooting species, A. reticulata being the one generally selected for this purpose. The operation

succeeds well in a close heated case, and the cuttings so grafted form plants more quickly than when on their own roots. A. Scheffleri is sometimes recommended as a stock for Aralias, but it is apt to rot off just as the plants attain a useful size, as are also the roots of A. Sieboldi, which have also been used for this purpose. Both stocks, however, have their uses, but as a permanent stock A. reticulata is the best. Among Roses Tea-scented varieties are of course a speciality, as they are so useful for button-hole and other bouquets, wreaths, and indeed for all other kinds of choice floral ornaments. Tuberoses likewise find a place here, as do also plants of the glossy-leaved Gardenia florida, from which large, white, and deliciously fragrant flowers can be obtained throughout the year. The roof of one large lean-to house is especially devoted to the growth of the Jasminum grandiflorum; this plant covers a space of about 15 ft. by 25 ft., and during the last three months has furnished weekly several hundred sprays of flowers. Sprigs of this Jasmine cut and placed in water open their buds freely, a circumstance which enhances its value as a decorative plant. The roofs of one or two other plant-houses are covered with Stephanotis, of which there are several varieties, a fact not generally known by cultivators, who are apt to attribute the profusion of flowers or fruit borne by some individuals of the same species to good culture, without making any allowance for that great law of variation which exists in all plants, and especially in such as are subjected to cultivation. One plant here has produced perfect wreaths of flowers, while another, to all appearance the same, only produces here and there a cluster. The same fact is noticeable in the case of the rosy Lapageria, which as a rule bears its flowers in twos or threes at the apex of its lateral or terminal branches; a plant in Mr. Salt's collection at Shipley Glen, however, bears flowers in garlands on short, axillary branchlets forming wreaths of waxy bloom a yard or more in length, as shown in a sketch published in THE GARDEN, Vol. VIII., p. 294. Both the rosy and white varieties of Lapageria do well at Anerley; of the latter we saw a good stock, while from a plant of the rosy form we plucked a leaf which measured 5 in. in length and nearly 4 in. in breadth. Many of the old-fashioned cut-leaved Pelargoniums are grown here in quantity for the sake of their fragrance and little clusters of flowers, which are far prettier for bouquets than the larger-bloomed florists' varieties. One of the most strikingly beautiful of all half-hardy, fine-foliaged plants grown here in quantity is Yucca filamentosa variegata, of which we found an excellent stock, and two specimens are certainly among the largest we have hitherto seen; they are healthy and brightly coloured, and measure over 2 ft. in height and more in diameter. B.

Pelargonium Leamington Lassie.—This new semi-double Pelargonium justly deserves all that has been said in its favour (see p. 283). It will be a good variety for decorative purposes, as it seems to have a hardy constitution, and its trusses of bold, pink flowers stand well when cut. It is the best semi-double kind I have seen.—R. GREENFIELD, *Warwick.*

A NEW ELK'S-HORN FERN.

(PLATYCERIUM WILLINCKI.)

Of all the species belonging to this singular genus of Ferns this is one of the handsomest. It has been exhibited on several occasions by Messrs. Veitch & Sons, by whom it was imported. In habit it most resembles P. grande, but the pendent fertile fronds are much longer than in that species, and droop from the broad crest like barren fronds in a very graceful manner. This Fern succeeds well, treated as a semi-epiphyte, in a moist and rather warm atmosphere. Placed on a stout piece of Teak or Acacia wood, its roots being packed with peat and living Sphagnum, the plant may be hung up on the back wall of a Fernery or conservatory, and in such positions has a fine effect among the more delicate and fragile-habited types of Fern beauty in contrast with which it may be so advantageously associated; or it may be planted sideways in a pot. B.

A New Elk's-horn Fern (Platycerium Willincki).

New Crimson-rayed Lily.—Now that there appears to be a slight misunderstanding as to the new form of Lilium auratum described in THE GARDEN (see p. 327), it may be interesting to know that I had—thanks to the courtesy of Mr. J. Stevens and Mr. Barr—an opportunity of making a coloured sketch of the plant, and I have since seen the drawing of L. rubro-vittatum alluded to by Dr. Wallace (see p. 352), and which represents a truly noble and brilliant Lily, but at the same time one which is as distinct from L. auratum cruentum as L. rubro-vittatum is distinct from L. auratum proper. The distinguishing characteristics of the new form are its dwarf habit, short, narrow dark-green leaves, closely arranged on a slender purplish stem, and its enormous crimson purple-rayed flowers, the colour of the ray shading into purplish black at the base of the segments so as to convey the impression of a black eye to the flower. This form of L. auratum, only 30 in. in height, bears flowers nearly 1 ft. in diameter, while L. rubro-vittatum proper has stems from 3 ft. to 4 ft. in height, and smaller leaves. Having seen both these forms of L. auratum, I find it impossible to confound one with the other; and in justice to a noble, dark-rayed, dwarf-growing form of L. auratum, the trivial name of L. auratum cruentum ought to stand good among Lily growers; botanically, of course, they are simply forms of L. auratum, inasmuch as they agree with the type in structure.—F. W. B.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Autumn-flowering Dipladenias.—Dipladenias are commonly seen trained formally as show plants, and but few know how graceful and floriferous they are when allowed to ramble naturally beneath the roof of a stove. Several kinds thus treated are now very attractive in one of the plant stoves in the Holloway Nurseries, where they hang from the roof in graceful festoons of pink, rose, and crimson, relieved here and there by means of bright, green leaves.—B.

Seedling Petunias for Indoor Decorations.—Last April I sowed a small packet of Petunia seeds, the plants from which were potted off and grown on in a cold frame, where they were kept well stopped. In July they were put into 24-sized pots and staked out, setting them on a bed of coal ashes fully exposed to the sun. All flowers were pinched off them, and in September the plants were brought into a cool house; they are now from 18 in. to 2 ft. in height, and one mass of bloom, which, owing to its great diversity in colour, is quite striking at this dull season.—R. GILBERT.

PLATE XLII.

ORNAMENTAL PYRUSES.

(WITH A COLOURED FIGURE OF PYRUS (MALUS) FLORIBUNDA).

By G. GORDON, Author of "The Pinetum."

THE genus Pyrus consists of deciduous trees and low shrubs of considerable beauty, both when in flower and fruit; they are mostly arranged by writers under the sections Malus, Pyrus, Sorbus, Aria, Torminalis, Chamæmespilus, and Aronia.

Section Malus—The Apples and Crabs.

The Coral-bud Apple (P. (Malus) floribunda).—This, as will be seen by the accompanying coloured illustration, is when in flower one of the most ornamental of the whole Apple family. It forms a tree of moderate stature, rather slender, yet of free growth, its shoots being long and flexible, and completely covered from end to end with flowers which in the bud state have been compared to garlands of ripe Cherries. In this condition they are deep rich crimson outside, and when fully expanded, pale pink inside. This beautiful tree flowers in May, and is a native of Japan. It is considered by many to be only a variety of P. spectabilis.

Showy Chinese Crab (Pyrus (Malus) spectabilis).—When in flower this is one of the most beautiful of all the species of Pyrus. Its flowers are semi-double, large, and produced in stalkless umbels in great abundance in April and May; they are pale rose when fully expanded, and just before they open, of a deep red colour. Its fruit is greenish-yellow when ripe, irregularly rounded, and about the size of a Cherry, but without flavour and unfit to eat. It forms a tree from 20 ft. to 30 ft. high, thickly crowded with upright branches, which at length become spreading. No garden, however limited, should be without this beautiful tree, of which there are several varieties.

Siberian Crab (P. (Malus) prunifolia).—This is the well-known Cherry Crab, which, when loaded with bright red Cherry-shaped fruit, is so very ornamental in the autumn.

Winter or Biggs' Everlasting Crab (P. (Malus) borealis).—This robust, free-growing tree, which grows from 15 ft. to 20 ft. high, has a dense, spreading head, and when old, drooping branches. Its fruit, which is bright crimson, very late in ripening, and about the size of that of the Cherry Crab, remains on the tree long after Christmas. It is a native of Siberia, and in mild seasons is nearly sub-evergreen.

Berry-like fruited Crab (P. (Malus) baccata).—This has smooth, oval, acutely-pointed leaves, set on longish foot-stalks, and regularly serrated on the edges; the flowers are white, and are produced in groups in April and May; the fruit is small, roundish, and yellow tinged with red. The tree, which grows from 15 ft. to 20 ft. high, is a native of Siberia.

Garland or Sweet-scented Crab (P. (Malus) coronaria).—This species, which forms a tree 20 ft. high, is a native of North America, from Pennsylvania to Carolina. Its leaves are broad, ovate, rounded at the base, smooth, angularly-lobed, serrated, and in very mild seasons more or less sub-evergreen, and late in appearing in the spring. The flowers are in corymbs, pale-red, smooth, and very fragrant; the fruit, which is small, deep green, round and flat, is produced late in the season. It is a very desirable tree on account of the fragrance of its leaves and flowers.

Narrow-leaved Crab (P. (Malus) angustifolia).—This is more or less evergreen, according to the season, and in very mild ones quite evergreen; the leaves are narrow, shining, oblong-lanceolate, serrated, tapering and entire at the base; the flowers, which are in corymbs, are pale blush when expanded, and red in the bud state, very fragrant, and produced in May and June; the fruit is small, green, and intensely acid. It is a native of Carolina in low woods, where it attains a height of from 10 ft. to 15 ft. This is a very desirable species, on account of its fragrant flowers and sub-evergreen leaves. It is sometimes called the Evergreen Crab.

The Black Crab (P. (Malus) melanocarpa).—This middle-sized tree bears small and very black fruit, and well deserves a place in ornamental plantations. It is the Black Borsdorffer Apple of the Germans.

Section Pyrus—The true Pears.

Mount Sinai Pear (Pyrus sinaica).—This is a much-branched, spreading robust tree, with ovate, oblong leaves, minutely crenated, and when matured, covered beneath with whitish down and smooth above. The fruit is roundish, not large, and has a longish, thick stalk. It ripens in autumn, but is hard, very austere, and uneatable.

The Snowy-leaved Pear (P. nivalis).—A robust, weeping-branched tree, with oval, entire, whitish leaves, silky beneath. Its flowers are produced copiously in terminal clusters, and the fruit is globular and very acid, except when ripe and beginning to decay, when it becomes sweet. This species is a native of the Alps and Austria, and grows from 10 ft. to 15 ft. high.

Willow-leaved Pear (P. salicifolia).—This has longish, narrow, linear-pointed, entire leaves, hoary on the under side. Its flowers are white, and are produced in few-flowered corymbs. The fruit, which is rather small and oval, is yellowish-green, set on a short stalk. It is a native of Siberia and the Caucasus, and is a very distinct kind. It grows from 20 ft. to 30 ft. high, and deserves a place in all ornamental plantations.

Chinese Shalee or Sand Pear (P. sinensis).—A very ornamental species, which in mild seasons is nearly evergreen. Its leaves, which are rather large, are heart-shaped, dark glossy green above when matured, but when young deep rich brown, downy beneath, and produced very early in the season. Its flowers, which are in terminal corymbs, are rather large, white slightly tinged with pink, and are produced in April and May. The fruit, which is rather large, is Apple-shaped, hard, gritty, rough, or warted on the surface, and yellowish-green when ripe, which is in October, and although insipid and uneatable, has a very agreeable perfume. It forms a tree from 15 ft. to 20 ft. high, with a somewhat spreading head thickly clothed with foliage.

The Bollweiller Pear (P. Bollweilleriana).—This very distinct kind has rather large, rough, oval leaves, coarsely serrated and woolly beneath. Its fruit is small, top-shaped, orange-yellow when ripe, and quite unfit to eat. It attains a height of from 10 ft. to 15 ft., and produces few branches, which are upright, thick, and rigid. It comes from Bollweiller, on the Rhine, and is frequently called Pyrus Pollveria.

Variable-leaved Pear (P. variolosa).—This forms a tree of considerable size in Nepaul and Kamaon, but is somewhat tender in this country. Its leaves are rather small, ovate-pointed, crenated, smooth, and shining in the adult state, and in mild seasons, or trained against a wall, nearly or quite evergreen. The flowers, which are white, slightly tinged with pink, are produced in May. The fruit, which is globular, remains on the tree all winter, and sometimes even till the flowers are produced the succeeding season; the fruit is not eatable until it becomes somewhat decayed.

The Sanguinole Pear (P. communis sanguinolenta).—This singular variety has rather small, gritty fruit, the flesh of which is quite red, sweet, and not bad to eat, but soon decays.

The Aurelian or Sage-leaved Pear (P. salviæfolia).—This is only a slight variety of the wild Pear of France. It is found both in a native state and cultivated about Orleans, where the inhabitants make very good perry from its fruit.

Section Aria—The White-beam Trees.

Common White-beam Tree (Pyrus Aria).—This is a native of Britain, and is common in many plantations, particularly on chalky soil, where it attains a height of from 15 ft. to 20 ft. There are several varieties of it, all of which differ in the shape and size of the leaves, and of these cretica or edulis is the most distinct. The leaves of P. Aria are ovate, doubly-serrated, and woolly beneath. The flowers, which are white, are produced in flat, compound tufts in May. The fruit, which is bright red, is mealy, acid, and astringent. The Cretan, or Edible-fruited variety, has flat, round-toothed leaves, quite smooth above when fully developed and hoary beneath. The fruit is bright red, somewhat sweet, juicy, and rather smaller than that of the common form.

Intermediate White-beam Tree (P. (Aria) intermedia).—This is a native of France, Germany, and Sweden, and has rather large, ovate, deeply-lobed, toothed leaves thickly clothed on the under side with white adpressed down. It grows from 15 ft. to 20 ft. high, and becomes loaded in autumn with large flat clusters of red fruit, which is just eatable when quite ripe in the autumn, but not good. It will be found a very desirable kind for small gardens; there are two varieties—one with broad, and the other with narrow leaves.

The Nepaul White-beam Tree (P. (Aria) vestita).—This, by far the best of the White-beam trees, is a native of the mountains of Nepaul and Kamaon. Its leaves are very large (sometimes 10 in. or 12 in. long), elliptic, pointed, toothed towards the apex, thickly clothed on the under side with silvery-white tomentum and deep green above, very late in unfolding in the spring, and before they fall in the autumn turning to a fine yellow. It is a rapid-growing, upright tree, from 20 ft. to 30 ft. high, with numerous flat

[illegible] *The Garden* [illegible] Southampton Street, Covent Garden, London [illegible]

THE CORAL BUD APPLE (MALUS FLORIBUNDA)

tufts of white flowers produced towards the end of May. Its fruit is rather small, round, greenish-brown, dotted on the outside, and not fit to eat.

Section Chamæmespilus—The Bastard Service.

Bastard Service (P. Chamæmespilus).—This is a small, stiff-branched shrub, 5 ft. or 6 ft. high, with ovate-pointed leaves, toothed on the edges, glabrous in the adult state, and when young downy beneath. The flowers are white tinted with rose, and produced in terminal clusters in May and June. The fruit, which is small and round, is bright orange-red when ripe. It is a native of the mountains of Europe in rough places, and forms a compact, stiff bush, which at the proper season becomes loaded with flowers and fruit. A very desirable shrub for gardens of limited extent.

Section Sorbus—The Service Trees.

Pinnatifid-leaved Sorbus (P. (Sorbus) pinnatifida).—This, which forms a tree from 20 ft. to 30 ft. high, is a native of the Western Islands of Scotland, Thuringia, and Gothland, particularly in rocky situations. Its leaves are rather large, pinnatifid or half-pinnate, and hoary beneath. The flowers, which are in flat clusters, are cream-coloured. The fruit is globular, small, red, and rather bitter in flavour. This variety is said to be a hybrid between P. intermedia and the Mountain Ash. There is a variety of it with pendulous branches.

Common Mountain Ash (P. (Sorbus) aucuparia).—This is so well known that it is only necessary to state that there are three distinct varieties of it—one with bright yellow fruit; another with pendulous branches; and a third with erect, rigid, fastigiate branches.

Small-fruited American Mountain Ash (P. (Sorbus) americana).—This forms an erect, robust, fastigiate tree from 15 ft. to 20 ft. high, found in Canada and Newfoundland in the sub-Alpine prairies of the high mountains. Its leaves are large, pinnate, smooth, and abundant. The flowers, which are arranged in very large, flat heads, are white. The fruit is deep red, very small and numerous, in terminal, large, flat heads, and bitter when ripe. Pyrus microcarpa is a synonym, and the Indian P. foliosa is hardly distinguishable from it.

True Service Tree (P. (Sorbus) domestica).—Of this well-known kind there are two forms, one with Apple-shaped fruit, the other with Pear-shaped fruit. It is a native of the mountainous parts of Europe, and forms a tree from 20 ft. to 40 ft. high, with an erect trunk. Its flowers are cream-coloured, and about the size of those of the common Hawthorn. The fruit is about 1 in. in length, greenish-brown, tinted on the sunny side with red and spotted, and when unripe extremely austere, but when mellowed by frost or keeping, soft, juicy and eatable.

Woolly Service Tree (P. (Sorbus) lanuginosa).—A distinct fastigiate, robust-growing tree, with leaflets serrated, and clothed with cottony down beneath. The flowers, which are white, are produced in broad clusters in May; the fruit resembles that of the Mountain Ash, but is smaller. It forms a fine tree 20 ft. high with stout branches, and a spreading head which becomes covered with leaves early in the season. It is a native of Hungary.

Spurious Service Tree (P. (Sorbus) spuria).—This has pinnate leaves, with three or five pairs of ovate leaflets, which are hairy beneath, and the terminal one is the longest. The flowers are small, white, and produced in May; the fruit is small, dark purple, and about the size of a small Currant. It forms a low tree with rambling, slender, dark-coloured shoots, and is supposed to be a hybrid between P. aucuparia and P. arbutifolia. Of this there are three varieties, which bear the names of P. spuria pendula, Sorbus hybrida pendula, and P. spuria sambucifolia.

Section Torminalis—The Griping Wild Service.

Common Wild Service (Pyrus torminalis).—This, which is a native of Europe, grows in woods and hedges; in England it is found chiefly in the midland counties, where it forms a tree 30 ft. or 40 ft. high, with a large trunk and spreading branches, flowering in April and May; the leaves, which are large, ovate, and somewhat cordate at the base, are set on long foot-stalks and lobularly angled; when young they are downy beneath, but when in the adult state deep green and quite smooth on the upper surface; the lobes are deep, acute, and toothed on the margins; the flowers, which are white, are borne in numerous large, terminal, downy, branched corymbs; the fruit is brown when ripe, not much larger than that of a Hawthorn. It becomes agreeably acid after the frost has touched it, and like the Medlar, good to eat.

Section Aronia—The Small Bush Pears.

The plants belonging to this section consist wholly of small shrubs, from 3 ft. to 5 ft. high, laden with small, white flowers, and red or black berries, and are very distinct from all other kinds of Pyrus.

Arbutus-leaved Aronia (Pyrus (Aronia) arbutifolia).—This forms a neat, twiggy, small, free-flowering bush; a native of North America, throughout Canada and Newfoundland. Its leaves are moderate in size, ovate or obovate, acute, finely-toothed, and downy beneath, and just before they fall in autumn they assume a deep red or purple colour; the flowers, which are white, are very numerous, and are produced in April and May in few-flowered corymbs; the fruit, which is small, rather globular, and dark red or purple-coloured, remains on the bushes all winter. This is a very desirable shrub for small gardens on account of the abundant way in which it flowers and the prolific crop of fruit which it produces in autumn. There are some varieties of it to be found in cultivation, but they are not very strikingly distinct.

Black-fruited Aronia (P. (Aronia) melanocarpa).—This, which is only a variety of the last, differs from it principally in being more robust and in having black fruit. It is a native of North America from Canada to Virginia.

Depressed-branched Aronia (P. (Aronia) depressa).—This is a low-growing, reclinate shrub, seldom more than 1 ft. or 2 ft. high; it has dark purple fruit, and flowers profusely in May.

Downy-branched Aronia (P. (Aronia) pubens).—An erect, robust shrub, 4 ft. or 5 ft. high, with downy branches and black fruit; it is more distinct than most of the others, and well deserves a place in small gardens, on account of its profuse flowering.

Abundant-flowered Aronia (P. (Aronia) floribunda).—This principally differs from the black-fruited kind in the profusion of its flowers, and in the leaves being tomentose beneath. It is considered to be a garden production, and well merits a place in every garden, however limited.

Great or large-leaved Aronia (P. (Aronia) grandifolia).—This is an erect-growing shrub, with smooth branches and leaves; it flowers profusely, and produces spherical, smooth fruit of a dark purple colour. The leaves are the largest of all the Aronias, and quite smooth; it is supposed to be of garden origin, and flowers in May. It is a shrub which well deserves a prominent place in every collection.

MY DIARY FOR SEVEN YEARS.

By W. DENNING.

October 16.—*Potting*—Young Pelargoniums. *Planting*—Arabis in flower-beds; taking up Schizostylis and planting it in cold frames. *Miscellaneous*—Tying Endive; pruning and nailing on north sides of walls; putting Chrysanthemums into span-roofed Peach-houses; getting East Lothian Stocks under cover; taking up Lettuces and putting them into orchard-house; laying Lilies in pots on their sides and covering them with sand; laying Box; giving the orchard-house a good watering; gathering Damsons and some Yew berries—the latter for sowing; autumn Cucumbers coming into bearing; beginning to manure garden ready for digging; turning manure for next year's Celery; pruning pot Vines; pruning and nailing Cotoneaster; cleaning Endive that has been planted for protection near walls; keeping Roses in pits at about 55° by night; giving Pelargoniums a little heat if cold or wet.

Oct. 17.—*Potting*—Young small-leaved sorts of scented Pelargoniums. *Planting*—Hardy flowers and bulbs in beds on terrace; also more Lettuce for spring use. *Miscellaneous*—Taking up some Peach trees and replanting them, in order to check over-luxuriance. Putting all tender cuttings into pits, leaving those that are hardy in frames; getting Strawberry plants and Anne Boleyn Pinks into frames; putting Fuchsias and scented Verbenas under greenhouse stage; also Coleus and Iresines into Cucumber pit. Syringing Stanhopeas with Tobacco-water and soft soap. Gathering all the late sorts of Pears and Apples; gathering Tomatoes and putting them on Vinery flue. Making second Mushroom bed ready for spawning. Finishing mowing. Uncovering first Mushroom bed; Mushrooms appearing in several places.

Oct. 18.—Putting freshly-imported Orchids on blocks, or potting them in small crocks and charcoal broken small; cuttings put in of Pentstemons in cold frames, also of Pansies, and of a few more Hydrangeas, placing the latter in a Cucumber pit; clearing verandah and planting its border with Wallflowers, bulbs, and other plants.

Miscellaneous—Taking up Cinerarias with large balls, putting them into large pots and placing them in a cold pit; putting Endive from open ground under the protection of walls; syringing Azaleas for thrips, using 5 oz. of soft soap and Tobacco-water to a can; sending in for use Marie Louise, autumn Bergamot, and Thompson's Pears; still gathering outdoor French Beans; taking up Carrots, and stacking them and Beetroot, having first dried them; Veitch's Cauliflower now in splendid condition; earthing-up Cucumber plants, only putting a little at a time and adding plenty of sand; also earthing-up Leeks; cleaning Vines in early Vinery, and painting woodwork; beginning to prune Peach trees and Figs in first house; weeding young Onions and Spinach; storing all bedding plant boxes in shed, and putting all coping boards under cover until again wanted.

Oct. 19.—*Sowing*—Mignonette for balcony. *Potting*—Some more Narcissus showing flower; shaking out and putting in best peat Cattleya Ruckeri (true), C. Dawsoni, C. El Dorado (all Moss), Leptotes serrulata, Oncidium Lindeni, and Eriopsis rutidobulbon. *Planting*—Wellingtonia and Abies Douglasi. *Miscellaneous*—Laying in a quantity of hearted Cauliflowers in pits; putting a few Heliotropes into a little warmth to induce them to open their blossoms; putting some long straw around Violet frames; washing Camellias and Oranges; looking over Mignonette for caterpillars; salting walks; putting fresh soil to standard Morello Cherries; digging vacant ground; rolling walks; a few Carnations in flower in pots; weeding Lily of the Valley. Keeping temperatures of Orchid-houses as under:—

	Night.	Morning.	Fire-heat.	Sun-heat.
East Indian house ...	68°	65°	73°	80°
Phalænopsis	71	68	76	80
Dendrobium	63	60	66	75
Cattleya and Vanda	63	60	66	75
Odontoglossum	57	54	60	65

Keeping Moss always moist in East Indian and Phalænopsis-houses, also floors and shelves, unless the temperature gets below 60°, only giving as much water as will keep Dendrobiums from shrivelling; keeping a little moisture on floor still; in Cattleya-house watering just to keep the plants from shrivelling, keeping Odontoglossums always moist; all Orchids which are making growth to be more watered than those which have finished it.

Oct. 20.—*Potting*—Anemone japonica and some plants of Sedum spectabile; beginning to pot Odontoglossums just beginning to root into peat, Moss, sand, and horse droppings; potting Lily of the Valley; planting fruit trees. *Miscellaneous*—Early Vinery ready for forcing; tying up some Bath Cos Lettuce; getting Violets in pots under cover, also Stocks and pot Centaureas; pot up together Musk and young Carnations; bringing Maréchal Niel Roses under cover; stacking Strawberry plants for which there is no room in frames; sponging Daphnes and Stephanotis; sending in stewing Pears, Brussels Sprouts, Celery, Mushrooms, Salsafy, Scorzoners, Jerusalem Artichokes, Spinach, Cauliflowers, Tomatoes, and French Beans—the first of the last from pots; those outside not quite over, but getting scarce; suspending ropes of Onions in loft; top-dressing tree Mignonette with manure; pruning first Hamburgh Vines; keeping flowering Pelargoniums about 50° at night; thinning buds on Camellias.

Oct. 21.—*Potting*—Dielytra and Hoteia japonica; also Veronica Andersoni from borders; and Centaureas, and putting the latter into slight heat, taking off nearly all the leaves. *Miscellaneous*—Taking off Chrysanthemum layers; plunging Roses, after pruning them, and Double Wallflowers in a cold pit; moving bushes of French Lavender into Orangery; nailing Currant trees on walls; getting all Pelargoniums under cover; taking up all Endive from the open ground; covering pots with soil in plunging ground; painting Peach trees and Fig trees in early house; sending in Ribston Pippin Apples, Pears, Currants, Nuts, and Grapes; gathering seed Scarlet Runners; putting frames ready for Lettuce; giving Cherries fresh soil; spawning second Mushroom bed; earthing up July-sown Cabbage. *Plants in flower.*—Scented, Scarlet, Pink, and Double Pelargoniums, Stocks, Mignonette, Balsams, Fuchsias, Heliotropes, Scented Verbenas, Amarantus, Coleus, Lobelias, Chrysanthemums, Primulas, Petunias, Larkspurs, Justicias, Narcissus, Scutellarias.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Bulbs.—Few plants are held in higher estimation generally, or better adapted for the requirements of amateurs than the different kinds of bulbs that can be had in flower during the winter and early spring months. They are easily managed, and especially well adapted for blooming in rooms by those who have little or no accommodation for growing plants in greenhouses or stoves. With a moderate amount of care and attention numbers of them may be grown in an ordinary dwelling house, and may be had in flower early in spring, when their presence in the windows will have a cheerful effect. Bulbs for winter decoration should be procured without delay, as the time has arrived when all roots of this description require to be in the soil. Hyacinths, Narcissus, Tulips, Crocuses, Snowdrops, and the beautiful blue Siberian Scillas are well adapted for growing in this way. They all require to be grown in pots, except the Hyacinths, and although these look well in glasses, yet beginners had better restrict their practice for a time to pot culture. Deep, old-fashioned pots are unnecessary. I have grown as good Hyacinths as need be produced for ordinary decorative purposes in 6-in. pots, three bulbs being placed in each. Nearly all depends upon the strength stored up in the roots. All that imported bulbs require at the hands of the cultivator is care and attention and a limited quantity of moist soil in which to grow or, more correctly speaking, second the development of the already existing powers stored up in the bulbs to produce a fine head of bloom. It is unnecessary, too, to purchase rare or expensive Hyacinths, many of the comparatively low-priced kinds being equally good as the newer and more expensive sorts. In most families of cultivated plants, there is something attractive in double flowers; even the term itself seems to favour the idea that they are better than single flowers; such, however, is really in many cases far from correct, and in the Hyacinth especially, the single varieties are by far the most desirable for ordinary cultivation, being generally superior in appearance, so far as the whole spike is concerned, and are much better for mounting than double ones when required for mixing with other flowers, especially in bouquets and for buttonholes. I should not recommend pots larger than 5 in. in diameter, as these will be found of sufficient size in which to grow a single bulb well, and they are better adapted for standing in windows or on side tables, or similar places, than when they are larger; the soil should be moderately open and porous, and if not naturally so, sufficient sand ought to be added to it to ensure these conditions; one-fifth sifted rotten manure and leaf-mould in equal proportions will improve it; put 1 in. of drainage in each pot, and press the soil moderately firm, leaving the surface ¾ in. below the rim, to admit of water being given; take as much out of the centre as will admit of the bulb being covered to about three-fourths of its depth, which will leave the crown sufficiently above the soil, which should be used in a moderately moist state, so that it will not require water at the time of potting; but it should not be so wet as to cause it to be adhesive, or the roots will not enter it kindly. The best course to follow with Hyacinths after potting is to treat them as if they were intended for forcing, that is, to put them in a cold frame, if there happens to be one at liberty, if not, under a south wall; in either case set the pots close together on 2 in. of coal ashes, to keep out worms, and put as much more material over them as will fill up the spaces betwixt the pots, covering the whole completely to a depth of 4 in.; this will induce the bulbs to make plenty of roots before there is any encouragement to top growth, even by the little extra warmth they will get in an ordinary living room with a fire in it; if in a frame the lights should be opened a little on sunny days, and care should be taken that the soil does not get too dry; to avoid this, if at the time of potting it contained the right degree of moisture, in a fortnight or three weeks the whole, ashes and all, should be moderately watered from a rose-spouted can; in about six weeks from the time of potting the soil will be sufficiently filled with roots, and the tops will have pushed an inch or so; the weight of the ashes above the pots will have served the additional purpose of preventing the bulbs from rising up out of the soil in which they are potted. When they are removed from the ashes and the pots washed clean, they should be placed for a few days where only a limited quantity of light can reach the young tops, as if suddenly and fully exposed to its influence, the result would be that the leaves would never develop fully, whereby the plants would be much injured both in appearance and in their ability to bloom. Nothing is better for thus admitting partial light than empty flower-pots, a size smaller than those in which the plants are grown, inverted over the young shoot. The light admitted through the hole in the bottom of these will be sufficient to impart gradually the natural green hue, after which they may be altogether exposed, and the plants set closely in the window; in this way a considerable number may be grown. They will come on much the quickest in rooms in which fires are kept continuously, and they may be succeeded by such as are in a cooler place. Some may be kept later in a frame covered up from frost during severe weather. See that from the time the bulbs are potted until they come into flower they never want for water, and keep them turned regularly to the light. The other species of bulbs mentioned require similar treatment, except in the number that may be grown in each pot. Narcissi should be like the Hyacinths—one bulb in a pot; Tulips, three; Snowdrops, eight or nine; Scillas, a similar number; and Crocuses, five or six. When done flowering in the spring they should be planted out in the borders,

where they will continue to bloom each succeeding year, but for the pots fresh bulbs should be procured every autumn, as from the genial soil and climate in which they have been grown, and the special cultivation which they have received, imported roots flower much better than those that are grown in this country, and have been subjected to the ordinary treatment we usually give such plants.

Kitchen Garden.—A piece of ground in a dry part of the garden should now by digging in a liberal dressing of manure be got ready for Cauliflowers under hand-lights, putting from five to nine under each according to the size of the lights. Many growers advocate this crop being planted earlier, but I have always found those that were put in about this time stand a severe winter the best, providing the plants have been sufficiently thinned out in the seed-bed; the check which they receive in planting has the same effect in hardening them as laying has in the case of Winter Broccoli, and there is yet time enough for the plants to get established before the end of the year, previous to which there is rarely any frost to injure them. If hand-lights or cloches be not available, a single light frame may be made ready and filled, putting the plants in about 8 in. apart; and in the southern parts of the kingdom a row may be placed at the foot of a south wall that can be protected during frost and snow by means of boards or mats. A row of Cos Lettuce sown some time back should also now be planted close to a south or west wall, and a dry spot on a south border should be prepared for the hardy Hammersmith variety. Attend to late sowings of Lettuce made in frames for planting out in spring; the lights should be kept on so as to prevent the soil from receiving much wet on the surface, as Lettuces are more liable to suffer from damp during winter if the soil contain much moisture than they are from frost; they must nevertheless, have abundance of air in fine weather by drawing the lights off, or raising them at both ends when too wet to fully expose the plants. If Parsley have been grown with plenty of room on a portion of the Onion ground, as has been recommended, the roots will now be large and strong; a dry bit of ground should be selected, and each root taken up with a good spadeful of soil attached to it, and planted with as little disturbance as possible; do not crowd the plants, only just allowing the outside leaves of each to touch its neighbour. If the weather be dry, give them a good watering at the time. When frost comes, ordinary glazed frames, or frames with mats or shutters can be used for protection.

Flower Garden.

The mixed border is just now the most interesting and pleasure-yielding part of the garden, as the principal portion of the summer bedding plants have had their beauty greatly deteriorated by the heavy rains that fell during September, but from which most hardy border flowers have derived considerable benefit. One of the most useful and effective herbaceous plants that have been in bloom for a long time past is Anemone japonica and its white variety, known as Honorine Jobert, both of which are so grand that no garden should be without them. If afforded good, rich soil with plenty of depth for their rambling roots, they produce flowers in the freest manner possible, which are not only showy on the plants but are likewise most valuable for cutting, in which state they will retain their freshness for some time, and associate well with Eucharis amazonica and other choice subjects of that class. Those who are not already in possession of the above-named excellent border flowers should lose no time in adding them to their collections, and when once established, they ought not to be disturbed, as they only become fully developed when left to themselves. Indeed, this is the case with most hardy, herbaceous plants, and the digging of the borders, dividing and replanting to which they are often subjected, effect considerably more harm than good. With some of the strongest growers that increase at a rapid rate, it is occasionally necessary to reduce their size, in order to confine them within proper limits and prevent them encroaching on others less robust and of more value, but the less the generality of them are interfered with the healthier and more vigorous become the plants; indeed, the employment of the spade ought almost to be interdicted from them. When thought desirable to break the surface at all, it should be done with a fork, and then only to such a depth as not to interfere with the roots. A top-dressing of short, thoroughly, decomposed manure is most beneficial to them at this season to lay on the surface during winter or to be just pointed in, that the rich juices it contains may be gradually conveyed to the soil beneath by the rain and melting snow. Herbaceous Phloxes are exceptions in regard to division and capability of enduring removal without injury as they rarely do well if allowed to stand in the same positions more than a year or two, and always throw much finer heads of bloom after being divided and replanted or propagated fresh from cuttings. It is very rare that the autumnal display of these popular plants is so good as it has been this season. This is owing to the severe drought during July and August, and to the forced rest they got in consequence, since which, the drenching rains and the great heat that remained in the ground have had a most stimulating effect and caused them to produce such a profusion of bloom. Pentstemons, too, have been unusually good, and now that they have been so much improved, deserve a more extended cultivation than they at present receive. They are altogether most valuable border flowers that appear to bid defiance to the weather, as their freshness and beauty do not appear in any way marred by the heavy rains and foggy nights that have been so fatal to the bloom of most other plants. Both these and Antirrhinums strike readily now, and as both frequently suffer from severe frosts during the winter, cuttings should at once be placed either in pots, or under handlights where they can have some slight protection afforded them in order to ensure their safety. Layers of Carnations, Picotees, and Pinks will now be rooted and should immediately be taken off and potted to be wintered in cold frames under glass, or they may be planted in beds or vacant places in borders to fill up gaps that have occurred through the removal of annuals or other short-lived plants.

Hyacinths and other Bulbous Plants.—Where these are grown in beds and borders, preparation should now be made to get the ground ready for their reception. In cases where the soil is at all stiff, or of a wet, retentive nature, it should be thoroughly broken by trenching it at least 18 in. deep, working in at the same time plenty of decomposed leaf-soil and sharp sand, giving the bed a good rise in the middle, which will help to keep the bulbs dry, and show them off to greater advantage when in bloom. For light, dry soils, substitute for the leaf-soil and sand a good dressing of dry cow-manure, such as may be collected where those useful animals have been lately pasturing. In planting the bulbs place a sprinkling of sharp, gritty sand under and around them before covering in with soil, which, in the case of Tulips and Hyacinths, should be buried about 3 in. deep. Before winter sets in it will be necessary to shake over the beds a thin mulching of some kind to keep out the frost, for which purpose nothing answers better, or has a neater appearance than half-rotten leaf-soil. Where it is intended to plant singly, or in patches to fill vacant spots in the mixed border, the soil should be similarly prepared as recommended for the beds, and the bulbs planted in the same way; but to afford them the necessary protection from the hoe, the ashes should be marked by placing neat pegs as guards, in order that they may not be disturbed.

Removal of Weeds.—The late rains have produced a prolific crop of seed-weeds, both in walks and borders, and attention should at once be directed to their eradication before they obtain a firm hold, and become unsightly and difficult of removal. In the case of those in borders, the Dutch hoe is the best implement to use at this season for their destruction, as it disturbs but little soil and leaves the weeds scattered on the surface, where a few hours' drying wind or sun makes the raking of them off a very easy matter, involving but little time and labour. With those on walks there is no way so effective and expeditious as pulling them up by hand; the best time for which operation is immediately after rain, as then they can the more readily be lifted, and the walks can the more easily be smoothed down and rendered firm again by running the roller over them. Where salt can be used without injury to the edgings, as it may be where the walks are margined with Grass, it is an easy matter to keep them free from weeds altogether by applying a very slight dressing every spring and autumn, but this should be done when the weather is settled, as a heavy rain just after using it would wash it away to the sides and cause damage to the verges.

Garden Walks that have an annual dressing of salt are always bright and clean, and entirely free from Moss and minute vegetable matter that invariably disfigure those not so treated. Independent of the good effect it has on the gravel by the thorough cleansing it gives, it adds much to its binding qualities, and thus assists in rendering the walks firm and comfortable for use in all weathers. This of course only applies to those made with good solid foundations and proper drains to take off the surface-water almost as quickly as it falls, for when this is allowed to penetrate, the bottom must of necessity become loose and rotten, especially after severe frosts in the winter, as then they become upheaved by the expansion that takes place below from a body of water finding its way and remaining stagnant among the material forming the bed of the walk. It is the greatest mistake possible to allow this to remain hollow, as is often the case under the erroneous idea that it should be so to form a drainage to keep the top dry, whereas all the water that falls there should pass to the sides and in at the gratings, to be carried away by properly-formed drains for that purpose. The material used for forming the foundation cannot well be too hard and rough, but the interstices amongst it should be well filled in with fine chalk or some other thorough good binding material to render it firm and keep it from shifting. Unless the bottom or foundation is thoroughly solid, it is impossible for the top

to be so. With a firm foundation provided, the next thing is to add 2 in. or 3 in. of good stony gravel with sufficient fine material left among it after being sifted to cause it to bind tightly together; the top 2 in. should then be finished off with finely-sifted stone, nones of which should be larger than good-sized Peas or small Beans, and if these have about their own bulk of fine adhesive material left among them, walks made as above described will continue thoroughly firm and good, and be quite impervious to worms from below, that are generally so troublesome and cause so much disfigurement when the formation of the paths is of an imperfect character.

Preservation of Lawns.—Next in importance to sound walks is a level, well-managed green sward, not level in the strict sense of the word, but without hills and holes or other irregularities that cause such a disfigurement and are so offensive to the eye. Where such imperfections exist it is now a good time to rectify them, as the rain we have had has softened the ground and will greatly facilitate the operation of cutting the turf to raise or depress it as may be necessary to obliterate the inequalities of the surface. By completing such work early the Grass will have sufficient time to re-establish itself, and will then stand the summer without becoming scorched, and showing unsightly patches as it would if deferred to a late period. All weeds, such as Plantain, Daisies, Crowfoot, and others of a kindred nature, are sure to show themselves in lawns after an abundance of rain, and attention should at once be turned to eradicate them as soon as possible, that their places may be occupied by the natural Grasses. It is only incessantly waging war with these that a rich, velvety turf can be secured, for if left to themselves only for a single season, they spread at a rapid rate, by means of the ready way they both seed and send out offsets. So much rain has now rendered lawns in a soft, spongy state, and advantage should be taken of this condition to get them well rolled down, which will not only add to their present appearance, but will greatly improve the texture and quality of the Grass, and make it more easy to cut by the machine. After such a dry time the worms are sure to force their way to the surface, which causes much disfigurement, and entails a considerable amount of labour to keep lawns in decent order; and to save annoyance in the future from them, it is a good plan to give them a dose or two of lime-water, which will quickly bring them out, when they can be swept away or picked up and destroyed. The application of the lime-water should be made immediately after heavy rains, when the worms are near the surface, as then it reaches them at once, and a much less quantity suffices than when they are lower down in the soil.

Protection of Bedding Plants.—Frost, the dread of the flower gardener, may now be expected at any time, and therefore where it is desired to save any of the bedding plants not yet housed no time should be lost in getting them up and potted. Tricolor and other variegated Pelargoniums are the first to suffer, and most difficult to winter satisfactorily when once the bark has become injured, as then they continue to die back from the more immature part, and eventually go off altogether. Owing to the slow growth of these as compared with the green-leaved kinds, they should not be cut back in the way usual to the latter, but only reduced in size by thinning out straggling branches that they may be placed close together to winter. Before potting strip them of most of their leaves and put them in 3-in. or 4-in. pots, which will be quite large enough to winter plants of a year old, and beyond that time they are not worth keeping. Most gardeners prefer Pelargoniums of that age on account of the greater freedom with which they flower compared to spring-struck cuttings; and as they can be wintered in less room, it is desirable to save as many as possible. By cutting them well back and reducing the roots, a great number may be packed away closely in boxes, or even pitted, after the manner of Potatoes, in which way they keep in good condition till the spring, when they may be taken out and potted. Many things in the fine-foliage garden, if taken up before the frost has disfigured them, will be found most useful for the decoration of large conservatories, halls, or similar places, where it would be unsafe to stand plants of greater value.—J. Sheppard, *Woolverstone Park.*

Variegated Orchids.

As certain sections of the Orchid family excel other plants in the beauty or singularity of their flowers, so do the different varieties of Anæctochilus and Goodyera claim precedence among variegated or coloured-leaved plants, the beauty of the metal-like tracery of gold, silver, and copper on brown, dark, olive, and various shades of green, being indescribably pretty. That there is a difficulty in the culture of these plants is sufficiently proved by the rarity with which they are met in any quantity in a thriving condition. For this several reasons may be given: in the first place, they are all plants that grow only a few inches in height; they are not furnished with pseudo-bulbs, containing stored up vitality; neither do they root profusely, and consequently they are more liable to suffer from wrong treatment than most other plants. Again, owing to their delicate appearance, they are commonly supposed to require but little air, the exclusion of which is often so vigorously carried out that it is by no means a rare thing to see a number of Anæctochili presenting a miserable appearance in small pots, each covered with a close-fitting bell-glass, whereby pure air is shut out, and that which is vitiated retained; Under such conditions, the plants have often more care bestowed on them than they require—killed, in fact, by kindness. If we could obtain by importation large quantities of these plants, so that they might be generally and widely distributed, we should probably soon find that they were more easy to manage than we at present imagine. This happened in the case of Goodyera Dawsoniana, which, when rare, although the most robust-growing of the family, was nursed in the same way as the Anæctochili and shared with them the reputation of being delicate, but on large importations of it being received, plants of it were potted six or eight in a pot, and placed without further protection in a Stove or Orchid-house, where they were found to be as free-growing as could be desired. The Anæctochili and Goodyeras are all terrestrial plants, having soft, fleshy stems; they are found growing among the undergrowth in woods in Borneo, Java, and Ceylon, and consequently when so situated are not exposed to the direct rays of the sun, and do not experience such rapid changes of temperature as if they were growing in more open situations; therefore it is not advisable to attempt their culture without protection such as that afforded by a bell-glass or small case, without first testing the suitability of the house on a specimen or two before risking the bulk; but where a house is sufficiently warm, moist, and shady to permit of the bell-glasses being dispensed with, finer plants may be grown without them than with them, and with less trouble. Where bell-glasses are used, they should be as large as possible; each plant of sufficient importance should be plunged in Sphagnum Moss, in a pan at least 12 in. across, and covered with a bell-glass fitting just within the rim of the pan. The glass should have a small hole in the top to let out the heated air, and should also have three or four pieces of crock placed under the rim to raise it slightly above the Moss, and thus allow the air to enter at the bottom; small plants should each be placed in a separate pot, plunged five or six together in a pan, and covered with a bell-glass in the manner just indicated. Anæctochili and Goodyeras succeed best when potted in small pots in a mixture of equal proportions of fibrous peat and living Sphagnum Moss, mixed together with a little silver sand. The potting should be done in March; but if the compost be turning sour they may be repotted at any other time. The proper temperature in which to keep them is from 70° to 75° by day and 65° at night during late spring, summer, and early autumn, and from 65° to 70° by day and 60° at night for the rest of the year; but in the case of these and other plants grown under bell-glasses, it is not enough to know that the temperature of the house in which the plants are placed is near to that recommended, the cultivator must satisfy himself that the temperature under the bell-glass is correct, and must regulate it by giving more or less air as required; when covered close by the bell-glass, the temperature around the plants is frequently 15° higher than that of the house, and the evil effects of this are aggravated by the air being of a heavy unwholesome character; inattention, therefore, to ventilation is oftener the cause of failure in the case of Anæctochili than in that of other plants. Although they rejoice in bright light, Anæctochili should always, as has been stated, be shielded from the sun; but it is preferable to place them on the shady side of the house instead of employing shading immediately over them; indeed, the situation in which these plants are placed in a house often influences them much. I have seen them improve immediately on being shifted from one side of the house to another. During the warmer months of the year, they should have a plentiful supply of rain-water, but never over the leaves and during the winter; and when they are in an inactive condition they should be only kept just moist. Although the flowers of some of the varieties are very pretty, it is not well to allow them to flower; on the contrary, it is better to pinch the flower-spikes out as soon as they are large enough to handle, and thus prevent them from exhausting the plants. Goodyera discolor and G. Dawsoniana, being robust growers, may be allowed to flower, and when grown several together in shallow pans, their pure white and yellow flowers are very acceptable in winter.—James O'Brien.

Green Tomatoes.—Many will doubtless be wondering what to do with the large quantity of green Tomatoes which the unfavourable weather has prevented from ripening; the annexed receipt may therefore be of use to them. The preserve is really good, though different from ordinary fruit preserve. It is prepared as follows:—Slice the Tomatoes, put them in a stewpan on the fire, adding to each pound of fruit ¾ lb. of loaf sugar, and to every 3 lb. of preserve two fresh Lemons cut in slices and the pips removed; 1 oz. of whole ginger to the pound of fruit. Stew till quite soft.—Ralph Walker.

TREES AND SHRUBS.

ROSY-FLOWERED WEEPING CHERRY.

(CERASUS PENDULA ROSEA.)

This fine ornamental Cherry, of which the accompanying is an illustration, is remarkable for the colour of its flowers and for the form of its branches, which spread horizontally and are frequently pendent. Its leaves are identical with those of the common Wild Cherry (Cerasus Avium). Its flowers, which first make their appearance about the beginning of April, are often 1 in. in diameter, and grow on reddish peduncles from 1⅓ in. to 2 in. long. Whence comes this species, and is it really indigenous, as certain writers pretend? This opinion seems both possible and probable, as in its general appearance it closely resembles our common Wild Cherry (Cerasus Avium), while the flowers, which are of a beautiful rose colour, and the petals, which are bifid, are in some respects singular in character; it has another peculiarity which has hitherto belonged almost entirely to the Japanese species of Cerasus—its barrenness. M. May (to whose article in the "Revue Horticole" of Sept. 1 we are indebted for the above particulars) has examined a large number of Japanese species, and has never yet found one to fructify fully. He has, it is true, noticed the development

Cerasus pendu'a rosea.

of a few young ovaries, but they have always fallen to the ground a few days after the flowers have faded. It is very hardy, and will endure the severest cold. It is quite worthy of being added to our stock of ornamental trees. Grafted low, and planted amongst rockwork, it has a beautiful effect. If, on the other hand, we graft it on a tall stock, we have a very handsome bush resembling in general appearance the Umbrella Medlar, but with pendent branches that produce a very singular effect.

CUPRESSUS LAWSONIANA ELEGANTISSIMA.

This is unquestionably one of the best Golden Conifers in existence. The merits of the typical or specific form of this Cypress are too well known and appreciated to require further mention here; indeed, its great beauty and hardiness render it the best for general planting of all the species of Cypress at present grown in Britain, and which for special grouping is only excelled by two or three of its own well-marked or striking varieties, such as erecta viridis, lutea, gracilis pendula, and elegantissima. It is to the latter that we would now direct attention; it was raised by Messrs. Lawson & Sons, of Edinburgh, and purchased some years ago from them by us. The leaves and younger bark are of a delicate canary-yellow, forming a striking contrast even to the deeper but less effective colouring of lutea. The delicate colouring of the plant might convey an idea of constitutional weakness or tenderness, and not without reason when we recall to mind the way in which certain well-known blotched, variegated Conifers are sometimes discoloured by strong sun-heat. Had such varieties, instead of being parti-coloured, been all yellow or self-coloured in the way of C. Lawsoniana elegantissima, it is very doubtful if they could ever have been nursed through the trying period of their seedling stage. We consider that all self-coloured seedling varieties of C. Lawsoniana that have successfully survived the seedling stage are sufficiently hardy to endure both the summer heat and winter cold in this country. At any rate this must be said of elegantissima: it has a good constitution, being easily propagated, is a vigorous grower and of good habit, and it passed through the tropical heat of last summer without a leaf being injured, while many kinds of evergreen Conifers of reputed hardiness were scorched. Its hardiness against frost is proved by the fact that it has stood out for the last two winters, in one instance being subjected to 25° of frost without injury. It is very effective in a mass, and strikes the eye at a distance. This we consider a great point in its favour, as the beauty of many fine plants of this class is only appreciated when closely examined. In addition to many first-class certificates, it obtained the first prize and silver medal at the International Show at Cologne last year for the best Conifer not in commerce, and where it endured for a month the most scorching sun, the only effect of which was to render the colour more brilliant. We believe, when it becomes more plentiful and better known, it will be in great demand for grouping purposes to relieve the monotonous and sombre green of other Conifers. No collection of Coniferous plants, in fact, can be considered complete without this beautiful and distinct variety. W. Barron & Son.

Borrowash, near Derby.

The Nepaul Goat-poisoning Pieris (P. ovalifolia).—This fine evergreen tree, which grows from 15 ft. to 20 ft. high, has the general appearance of Arbutus procera, but is more dense and spreading. It is a native of Nepaul, and does best planted in peat or in a light, sandy soil enriched with leaf-mould. It is said to poison the wild goats that browse upon its foliage in the winter months. The leaves are oval, pointed, roundish at the base, set on rather longish foot-stalks, alternate, slightly downy when young, but quite smooth in the adult state, and leathery; they measure from 2 in. to 4½ in. long, and 1 in. or 1½ in. broad. The flowers are disposed in numerous, lengthened, drooping, one-sided racemes, and are produced in May; the corolla is tubular or ovate, with a contracted, fine-toothed, revolute border, and white or pale flesh-coloured. Its synonyms are Andromeda ovalifolia and A. Capricida. It is perfectly hardy, and should find a place among choice trees and shrubs in every garden.—G. Gordon.

The Carolina Poplar.—This old acquaintance, and the best of the Poplars for use as a shade tree, or for its wood, has been generally known as the Black Italian Poplar—"black," because its foliage is of a deep rich green, and dense; and "Italian," because, having been taken to Europe at an early date, and being easily propagated, its peculiar merits for street and road planting caused its extensive use in Italy and Germany. In many places where no fences are used, and the country is nearly bare, the lines of road are, according to the "Cultivator," rendered visible for miles by the double line of these Poplars which grow along their sides. Although the tree is usually grown from cuttings, it does not incline to throw up suckers from the roots, as most Poplars do.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Rate of Growth in Wellingtonias.—There is a Wellingtonia in St. Michael's Cemetery at Bath that was planted in 1862 when about 2 ft. high; its height now (Oct. 3, 1876) is 40 ft.; the circumference of the branches near the ground is 20 yds., and that of the stem 1 ft., in height, 6 ft.—Wm. Rolls.

The Lycopodium-like Cryptomeria.—In the "Revue Horticole" M. Carrière describes this variety as Cryptomeria lycopodioides, which, he says, is to C. japonica what Pinus excelsa denudata is to the typical P. excelsa. Its slender branches, covered with small leaves, lengthen much without branching, and are graceful. It is strongly recommended to lovers of Conifers, and will, no doubt, be obtained in good time by our nurserymen.

Tree Growth on Mountains.—In the Himalayas, at an altitude of 11,800 ft., trees grow, and there are often forests just below this line. In the Andes at 12,130 ft.; and in the Alps they discontinue on an average at 6400 ft., but it is stated that specimens of trees are found above 7000 ft. In the Himalayas there is no Grass vegetation above 15,400 ft., but the pasture grounds in Thibet are known to extend over an elevation of from 15,000 ft. to 16,350 ft.

Transplanting Hickories.—The "Gardeners' Monthly" informs us that the "Hon. Leverett Saltonstall, of Massachusetts, reports that he finds no more difficulty in transplanting Hickories than any other trees, if they have been transplanted when young, and this is the experience of nurserymen." He also says that the Hickory tree will fruit in fifteen years from planting.

The Hill-side Ceanothus (C. Collinus).—This robust evergreen hardy shrub grows about 1 ft. high, and flowers in June and July. It is a native of North-west America, grows freely in any good garden soil, and forms a very beautiful, low-spreading shrub for planting on rockwork. Its leaves are roundish in form, quite smooth, and flat, the upper surface deep green and shining, and the under one three-ribbed and bright green. The blossoms are in axillary panicles, white, and very abundant. It is sometimes called in nurseries Ceanothus Douglasi.—G. G.

THE FRUIT GARDEN.

NOVEL MODE OF TREATING PEACH TREES.

In the last volume of the "Journal de la Société Centrale d'Horticulture de France" there is an interesting article by M. A. Rivière, the chief gardener at the Luxembourg, in which he describes a method of improving the growth of Peach trees, and enhancing the size of their fruit, by slitting the branches in a peculiar manner, as practised by M. Desiré Chevalier, the well-known Peach grower, of Montreuil. At a meeting of the Society in question, held on the 14th of April, 1873, M. Chevalier exhibited the branch of a Peach tree in which, while it was still young, he had cut a rather deep slit, which it was easy to perceive had had a marked effect in improving the growth of the tree. In the following year M. Chevalier repeated his experiments on trees of all kinds, but especially on Peach trees, and always with the same success. M. Rivière simultaneously followed out the same experiments with similar results. The system of slitting Peach trees, carried out according to the conditions described by M. Rivière, seems to have the effect of causing the tree to produce larger and earlier fruit, as well as to push new shoots in positions where we should least expect them. The operation is simple, and must be performed at pruning time—that is to say, in February or March, when the flower-buds are beginning to show themselves. It consists in making an upward slit half through the shoot, just under a flower-bud, leaving the "heel" thus formed open as in layering Pinks. The slit is generally made at about a third or say half-way up the shoot, and should be carried through the middle of

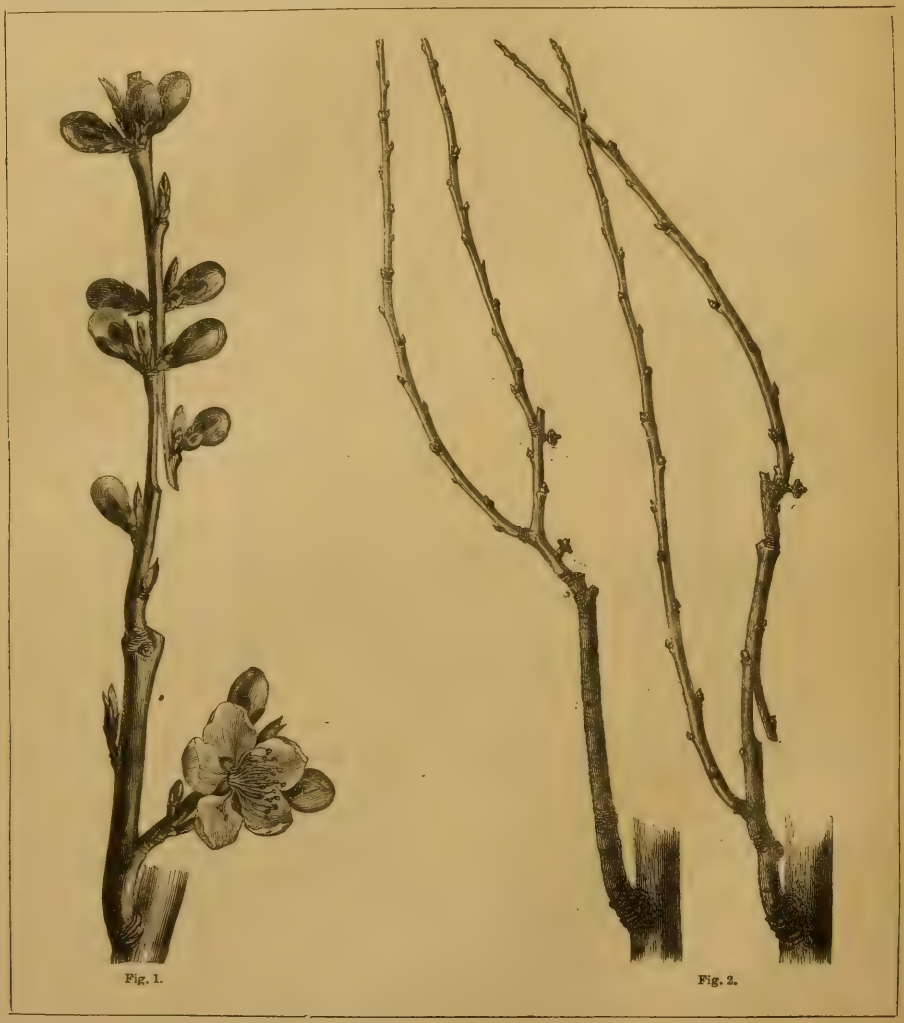


Fig. 1. Fig. 2.

the pith. A sharp pruning knife should be applied behind the hoot to be cut—that is to say, on the side next the wall, the thumb being used in front to support the shoot. An upward cut is now made, moving the knife from left to right. When the cut reaches the pith, the knife is withdrawn, and the upper portion of the shoot is bent gently forward by the thumb and finger, so as to split the shoot vertically for a distance of from ½ in. to 2 in. from the cut. The length of the slit depends very much on the size and strength of the shoot operated upon. The slit resembles that made in preparing Pinks for layering. The result of the operation is shown in fig. 1. The slit must now be firmly bound round to prevent accidents. If the experiment have been made on a shoot bearing both leaves and flowers throughout the whole of its length, it will be remarked that there will be no difference in the development of the leaves and flowers situated above and below the slit. In April the useless buds must be pinched off, and the young fruit thinned away, leaving two above and one below the slit. Of course one bud must be left below the slit to form the next year's growth, and as near the old wood as possible. When the fruit begins to ripen, it will be noticed that the Peaches growing on the upper part of the shoot are more advanced and of larger size than those below the slit or on the uncut shoots. It will also be observed that the Peaches on the upper part of the shoot will ripen several days before the others, and the shoots left for next year's growth will be much more vigorous than those on the uncut branches. According to M. Rivière, M. Chevalier was led to adopt this system by accident. A Peach grew upon one of his Peach trees in the angle formed by a young shoot, and the old wood. The shoot which was intended to produce the next year's wood could not be conveniently tied in without interfering with the development of the fruit; it therefore had to be bent over the Peach, but it grew in an awkward position. Later on M. Chevalier endeavoured to train it in another direction, but it broke in the middle, and split longitudinally. Taking no heed of the accident, M. Chevalier tied it in with the others, but was not a little surprised to find that it bore a larger and finer Peach, which ripened earlier than those on the rest of the tree. Struck with this fact, the next year, at pruning time, M. Chevalier imitated the accident on every kind of tree in the fashion already described, and with the same results. He was thus led to experiment on other shoots—those with only wood-buds at their extremities—the rest being wholly flower-buds—shoots, in fact, that have to be destroyed at pruning time. Such shoots, it may be observed, often have a number of scars resulting from leaves which have fallen off the year before. At these spots, to M. Chevalier's surprise, new buds developed themselves on branches which had been slit, although fruit had been produced above the cut. By adopting this system the branches may be allowed to grow longer, and bear a larger quantity of fruit than they otherwise should do, because we are always sure of having the bud for the next year's shoot below the slit; this is shown in fig. 2. The system may also be adopted with equally good results in the case of maturer branches, as shown in fig. 3, in which E shows the slit. It will be noticed that as the branch operated on is thick and vigorous the slit is comparatively long; notwithstanding this it will be seen that four fine Peaches were borne above the wound. Below the cut is a single fruit and four buds, one of which was left to serve for the next year's growth. As in the other cases the fruits produced on the portion of the branch above the cut were earlier and finer than the others. According to M. Duchartre, the only way of accounting for the phenomenon is by supposing that the descending sap is partly checked in its descent, thereby supplying an additional quantity of nourishment to the fruit above the slit. If we examine the lower portion of the heel we shall find a slight swelling, and on the cut surfaces a number of warty excrescences formed between the bark and the alburnum, a circumstance which shows a tendency towards reunion, but this must be avoided by keeping the parts separate. Many object to M. Chevalier's method, on account of its causing the trees to produce gum, but M. Rivière denies that it has this effect. The number of Peaches to be allowed to grow on the slit shoots must be in proportion to the general size and vigour of the tree, and of the shoots themselves. As a general rule two Peaches may be left above the slit and one below it; when the shoots are long and thin, a single fruit should only be left above the slit and none below it. For these remarks, as well as for the woodcuts which illustrate them, we are indebted to the Central Horticultural Society of France.

Fig. 3.

The Ribston Pippin on Walls.—The finest and most highly-coloured fruits of this that I have seen for a long time are now on walls in the fine kitchen garden at Stackpool Court, Pembrokeshire. Where this fruit is a favourite, as it so very often is, it would be worth while, even in the most favoured districts, to grow a few trees on walls, if only for the sake of having fruit of a somewhat different character from that on standard, espalier, or other trees.—V.

GARDEN RECEIPTS.

Rabbits.

Rabbits and hares are very destructive to young trees by gnawing away the tender bark above the crown of the roots. Most trees outgrow danger from rabbits, which as a rule will only attack young trees; but Hollies and Laburnums are never safe, and the largest specimens are liable to destruction by these little pests. The following are amongst the most usual remedies:—

Assafœtida.—A teaspoonful of tincture of assafœtida in half a bucketful of liquid clay, mud, or muck of any kind, applied with a brush to the stem and branches of young trees will preserve them from the attacks of hares and rabbits without injury to the trees. Two or three applications during the winter will be sufficient.

Cork Guards.—Rabbits and hares may be kept from gnawing young saplings by tying Cork guards round the foot of the trees. The material used is virgin Cork, at present so much employed in the construction of Ferneries, which can be procured in pieces of all shapes and sizes. It can be easily placed round the stems of young trees and attached in such a way that the attacks of hares and rabbits will be rendered ineffectual. The mischief caused to specimen trees planted near dwelling-houses, in parks, or on lawns, by cats and dogs, &c., may also be prevented by the same means. First fix the pieces in their proper position, and then fasten them together with wire or strong twine, an operation which can be done at a trifling expense. It would of course be better if such tree protectors could be made to close round the stems and open and shut by means of hinges.

Cow Manure.—A mixture of lime, water, and cow manure made pretty strong, forms an excellent anti-rabbit composition. There should be plenty of the latter ingredient, both to make it adhere properly, and because, if lime be in excess, the mixture dries too white upon the trees and is unsightly, whereas, if properly mixed it dries just the right shade of greenish-grey. Where tar is objectionable on account of its injuring the young trees, a simple mixture of soot and cow manure made thin enough to be put on with a brush, will help to ward off the attacks of rabbits during ordinary seasons.

Faggots.—In large plantations where hares and rabbits have to be dealt with by the thousand, one of the best remedies is to get from 50 to 100 faggots, stack them up in any corner, and you will find the rabbits burrowing under the stack in a very short time. Give them a month's peace, and then by the help of a net put all round the faggots, proceed to throw the wood over the net: you will find the rabbits at the bottom of the heap, when you should be armed with a short, stout stick, and give them the *coup de grace.*

Sulphur.—A mixture of equal proportions of sulphur, soot, and lime made into a thick cream with liquid cow manure, is also very effectual in cases where a strongly-smelling remedy is not objected to.

Tar.—Where appearance is of no consequence Stockholm tar is recommended. Gas-tar should never be applied to young trees, especially if the bark be already stripped away from them. The stems should be tarred from the ground to about 20 in. in height. If the plants be wanted for ornament, the following plan is preferable if the extra expense be no objection:—Instead of applying tar to the tree itself, stick three or four stakes round each plant at the distance of 9 in. or 1 ft. from it, then tie a piece of fresh tarred line round the stakes at the distance of 9 in. from the ground. The tar should be mixed with an equal portion of manure, of about the same consistence as the tar, or it may injure some of the trees. A strip of tarred paper tied round the stem is also of service where the rabbits are not very numerous. Strong subjects may be daubed with a mixture of equal parts of gas-tar, cow manure, and water made into a thick paint. If there be any marks of old bites, they should be carefully painted over.

Various.—Amongst miscellaneous remedies we may cite the following:—Place a thin layer of Reeds or refuse hay round the stems, and fasten it with a tough Reed or tie of straw.—Rub the bark with something distasteful to them, such as strong-smelling grease.—The application of a paint made of butter-milk and soot when snow falls, and again in March, is said to be an excellent remedy.—Wire netting or tying Birch or Heath round the necks of plants, are effctual remedies in severe seasons where the rabbits are numerous.

Rats and Mice.

The common small water-rat is considered a harmless animal that usually confines its operations to the margins of ditches or small running streams, but, like all the species, it is endowed with a considerable amount of cunning, and is sometimes guilty of committing depredations for which it is held blameless. Broccoli and winter Greens are his especial favourites; he gnaws the bark, and very often eats entirely through the stems, frequently puzzling the gardener as to the manner in which his vegetables have been destroyed. For his size, there is, perhaps, no animal so savage and voracious as the common Norway rat; and, if allowed to become numerous, the damage done both to garden and farm produce is immense. These vermin, often very destructive to ripe fruit, are especially good judges of Grapes, and, either from their acute sense of smell or from the possession of some wonderful instinct, they always attack the best-flavoured fruit first. If choice hothouse fruit be not obtainable, they will be content with Gooseberries, Nectarines, Plums, or even Morello Cherries, but in all cases they are sure to help themselves to the best of both fruit and vegetables. Many different plans have been suggested and described for their destruction both in the way of traps and poisons; but in dealing with poisons some experience in their manipulation is necessary in order to be successful. Where rats are not numerous they may be got rid of by carefully stopping all holes in buildings with cement, trapping or snaring them in their runs, and afterwards filling up their holes in the banks or hedges with broken glass or some other obstructive material. Rat-holes can also be plugged with tow, hay, or some similar substance soaked in gas-tar, for though a rat may break out of a tarred hole, he will never enter it again. The methods of extirpating rats, all more or less trustworthy, are simply endless. From a large number we select the following, which will be found the most efficacious:—

Arsenic.—Oatmeal or wheaten flour, 3 lb.; powdered indigo, ½ oz.; finely powdered white arsenic, 4 oz.; oil of Aniseed, ⅓ drachm. Mix, and add of melted beef suet or mutton tallow 2½ lb., and work the whole up into a paste. This receipt is used by the French Government.

—— Oatmeal or wheaten flour, 1 lb.; moist sugar, ¼ lb.; white arsenic and rotten cheese, of each 1 oz.; rat scent, a few drops.

Carbonate of Baryta.—Sugar and oatmeal, or wheaten flour, of each 6 oz.; carbonate of baryta, ¼ lb.; oil of Aniseed enough to make the mixture smell pretty strong.

Nux Vomica.—Oatmeal or flour, 1 lb.; nux vomica in very fine powder, 1 oz.; rat scent, 5 or 6 drops.

Tartar Emetic.—Tartar emetic, 1 part; oatmeal or flour, 4 parts; beef or mutton suet enough to make all into a paste; rat scent enough to give it strong odour.

Traps.—The use of traps as a remedy for rats and mice is greatly to be preferred to poison. Wherever children or domestic animals are about, the use of poisons should be strictly forbidden. Besides this rats when poisoned frequently die behind the wainscoting, and the house becomes filled with a stench that is generally laid to the account of the sewers. In setting traps for rats, it is as well to render the bait especially attractive to them by using one or other of the following rat scents:—Powdered assafœtida, 8 grains; oil of rhodium, 2 drachms; oil of Aniseed, 1 drachm; oil of Lavender, ⅓ drachm. Mix by shaking up well.—Oil of Aniseed, ½ oz.; tincture of assafœtida, ¼ oz.—Oil of Aniseed, ¼ oz.; aquafortis, 2 or 3 drops; Musk, 1 grain. Work up the Musk and some of the oil with the end of a knife, and mix it with the whole before adding the aquafortis.—Traps should be always baited with some strong-smelling bait; cheese, for instance, should be well frizzled, and bacon and similar substances should be well fried before being used.

—— Fill a barrel half-full of water and sprinkle a layer of powdered Cork on its surface, and over this sift a layer of flour or oatmeal. Place a chair and a box or two in the neighbourhood, whereby the rat will be enabled to gain the edge of the barrel. He sees nothing but the meal; he has no innate ideas

which teach him to beware of the treacherous foundation on which that tempting surface rests. He sniffs, he leaps, and goes gently down through meal and Cork to his watery grave. If any of his friends see him disappear from the edge of the barrel they hasten after him to get their share of the probable plunder, and are in their turn taken in by hospitable death.

—— One of the best modes of catching rats alive is by means of the common oblong trap with square ends, made solely of wire; one end to open upwards, when set by a fastener from the top communicating with the inside. This shuts with a spring when freed from the catch by the rat touching the hook or a platform of wire inside to which the bait is tied. This trap may be used for catching several rats at a time. In addition to a piece of bacon or cheese tied to the inner platform, place the trap on a wooden tray or board (about ½ in. wider than the trap all round), with slips of wood ½ in. high along three sides, leaving one end open for the door of the trap; on this place sufficient meal to bed the bottom of the trap so that the rats can walk through it without feeling the wire, which scares them. This additional bait induces many to enter at one time, and frequently five or six are inside before the catch is accidentally freed by one of them, when all are caught.

—— Take a large plant pot, say 3 ft. in diameter at top and 3 ft. deep; sink it into the ground till even with the surface, and place about 1 ft. of water in it. Then take a deal board 3 ft. long, 6 in. wide, and ½ in. thick; saw off 1 ft. of it, which must be smoothly planed and re-fastened in its place with two easy-working brass hinges; then fasten a weak steel spring on to the longer part of the board and reaching over the saw-cut on to the shorter part, so that by holding the board out horizontally, the spring will just hold this shorter part of the board on a level with the rest. The spring must, however, be only strong enough to do this and a very little more. This trap-fall is then placed half-way over the pot of water, and a large stone is placed on the other end to hold it firm. The drop is then well greased on the planed side, and some strong-scented bait is nailed on to the extreme end. The rat will walk on to the drop, which will not yield till he is fairly on; one step more, and down he goes into the water, the drop returning into position for another customer. It is better to put something in the water, quicklime for instance, which will kill the rats speedily.

—— Cover a common barrel with stiff, stout paper, tying the edge round the barrel; place a board so that the rats may have easy access to the top; sprinkle cheese-parings or other food for the rats on the paper for several days, until they begin to believe they have a right to their daily rations from this source; then place in the bottom of the barrel a piece of stone, brick, or clinker, about 6 in. or 7 in. high, filling with water until only enough of it projects above the water for one rat to lodge upon. Now replace the paper, first cutting a cross in the middle, and the first rat that comes on top of the barrel goes through into the water, and climbs on the stone. The paper flies back to its place, and the second rat follows the first. Then begins a fight for the possession of the dry place on the stone, the noise of which attracts the rest, who tempt the same fate—the result being that in the morning one rat, the strongest of the number, is found alive, in solitary possession of the island, all the others being killed or drowned.

Various.—Amongst miscellaneous remedies the following may be tried:—Buy three or four ferrets and turn them loose on your premises in different places.

—— Find out the water they frequent; if a pond (which in many places is the sole surface water, the common supply coming from pumps), bar all approach but one, and set up traps in it.

—— Flag round the outsides of your stables and outhouses.

—— Let slates into all the angles of your walls; these angles are rat ladders; with slates set in them rats can get down but never can get up again.

—— Have all your ricks on rat-proof rick stands.

—— Put sheet iron on the base of all your outside and granary doors.

—— Most outhouses have one or two passages gnawed by rats for their free exit and entrance.

—— In a wall garden a stoat might be encouraged, which would rid you of mice, rats, and many small birds.

—— If fruit trees be approached from below put weeds along the base of the wall, and pour on them gas tar.

Mice, in their small way, are in some places nearly as destructive as rats. The large bull-headed Grass mouse eats its way, nibbling innumerable roads and runs in every direction, through old pasture and meadow Grass.* Its most destructive form of depredation is that of nibbling the bark off young plantation trees, coppice-wood, hedge-rows, &c., sometimes destroying many acres. Many fine healthy plantations and Holly hedges have been entirely destroyed by these mischievous vermin. The depredations of the field or garden mouse are only too well known to farmers and gardeners, through their activity in digging up whole rows of Pea, Bean, Radish, and other seeds, by their stealing all the best Filberts, the Walnuts, Chestnuts, Beech-nuts, Acorns, common Laurel-berries, Portugal Laurel-berries, the hard kernels of Holly-berries, Thorn-berries, and a host of other berries and seeds, and hoarding the same for winter store. They will get into Cucumber frames, pits, or houses, dig up newly-sown seed of both Cucumbers and Melons, and what is still worse find their way in when the plants are in full vigour and bearing fruit, and make sad havoc; and to crown all, they will gnaw fine plants in full bearing right through near their roots, killing and destroying the whole at once, and they will act in the same way with various other kinds of plants, both indoors and out. They are special enemies of the Yellow Crocus; they will attack Crocuses the very first night after they are planted, and not only that, but they will continue to feast on them, old and young, as long as they are in the ground, whether in bloom or not; they only eat the bulbs and leave the Grass or foliage, but if the bull-headed Grass mouse should make his appearance after the Crocuses have thrown up their young Grass above ground, he will graze on even that at that early season. They are also great enemies of young Carnations, which they devour greedily. As a rule mice visit gardens and seed-houses in larger numbers than rats; they are also more difficult to trap, being more cunning, besides their hunting grounds are distributed over a much larger area, their most mischievous work being confined to the open air. In the majority of cases, therefore, the only hope is in poison, the great question being which is the safest and least expensive mode of administering it.

Aloes.—This drug is of great use for keeping mice from eating newly-sown Peas. Dissolve 2 oz. of the best Barbadoes Aloes in 1 gallon of water, and soak the Peas in it for twenty-four hours before sowing. The solution has no mischievous effect on the Peas. Gentian root may be substituted for the Aloes where the latter cannot be procured.

Ashes.—Covering the Peas over with a dressing of coal ashes is also recommended. After the Peas have been sown, and the surface levelled, cover up the rows with a layer of ashes about 2 in. thick. Mr. E. Hobday states that he never knew this plan to fail. He supposes that the ashes act by concealing the scent of the Peas.

Camphor.—Where valuable seeds are kept in drawers or boxes, they may be effectually preserved from the depredations of mice by mixing a few pieces of camphor with the seeds. The camphor must be renewed occasionally, as it evaporates when exposed to the air.

Paraffin Oil.—If Peas be mixed with paraffin oil, in the proportion of a quart to a tablespoonful, and sown wet, no mice will touch them. Petroleum and turpentine are equally effectual.

Plaster of Paris.—One of the cheapest and most easily obtained poisons for mice is Plaster of Paris and Wheaten flour. Mix one part of plaster and three of flour, and be sure the mixing is complete. As damp soon destroys the efficacy of this mixture, choose dry weather to put the mixture down, and, having placed it in convenient spots, turn over it a large empty flower-pot, or a slate to protect it from the weather. As it will rapidly absorb moisture, the mixture must be prepared again and again, in order that the mice may have it fresh and dry. The carbonate of baryta mixture, recommended for rats has the merit of keeping best, but is much dearer.

Red Lead.—M. Gloede, in the "Revue Horticole," recommends the following as a most effectual protection for newly-sown Peas:—"Twenty-four hours before sowing I steep my Peas in water. I then powder them over with red lead, rolling them about in it so that it may adhere to and cover the entire surface. After this I plant them in the ordinary way, and for ten years, during which I have followed this plan, my Peas have never been attacked by mice."

Resin.—Peas, soaked in salad oil, and then rolled in resin, are thereby effectually preserved from the depredations of mice and birds.

Traps.—A very successful trap for destroying mice has been found to be the following:—Bury a rather deep earthenware basin in the earth till it is slightly above the surface, half fill it with water and plaster the rim inside with lard; the mice in their efforts to reach the lard overbalance themselves, and after a short swim perish. Another simple and efficient trap is made in the following manner:—Take a tolerably tight barrel, bore a hole near the bottom as an entrance; throw into it an armful of ears of corn and a handful of rags or waste paper to make a nest, cover it so that the mice may be kept in the dark, and let it stand quietly a few days to give them time to colonise, then plug up the entrance; dash in a few gallons of water, clean it out thoroughly, and set your trap again. Mice are also easily trapped with Peas first soaked and grown from ¼ in. to ½ in., and then threaded, two being allotted to each trap, left 1 in. apart on the thread so as to afford room for the mice to put their mouths to it and bite asunder the thread; this is cut in lengths of 10 in., a knot being tied at each end and pulled into two slit sticks, which are run into the ground to hold up the Peas. Currant shoots or Raspberry canes cut into 1-ft. lengths may be used for this purpose placed conveniently for the mouse to get at and nibble the thread asunder. On this rests one end of a brick, the other being on the ground, and when the thread is gnawed in two the brick falls on the mouse and kills it. A slate should be laid on the ground for the brick to fall on, and the bait need not be higher than about 2½ in. from the ground. Hundreds of such traps may be set in the course of a day. They are the most simple, inexpensive, and surest mouse-catchers ever invented.

—— The old figure of 4 trap, the spring trap, and a dozen besides, are too well known to need description.

Any of the rat poisons mentioned above are equally killing in the case of mice. One of the best baits for mouse-traps is made of equal parts of cheese, oatmeal, lard, or fat, and chopped tow. Mix these up together into a paste, so that it can be spread on the end of a stick without string. If held for a time before the fire, so much the better, as it sets fast when cold. This bait can be carried in the pocket when the trapper takes his rounds. One bait will last sometimes for twenty mice.

All natural correctives, such as owls, hawks, ferrets, stoats, &c., should be rather encouraged. Those who nail up owls and other mice-eating "vermin" on barn doors should think of the plague of mice, which is as surely coming to England as the gamekeeper is eradicating sparrows, hawks, ravens, jays, magpies, &c. Owls prey unceasingly on mice by night and kestrels by day; these invaluable birds to both gardener and farmer should, therefore, be encouraged for this purpose, for without them crops in some places would be devoured by mice. Cats are not of much use to clear a country; they do not catch the mice quick enough. The time to commence war on these destructive rodents is in March or April, when they begin to breed. There are several receipts for the destruction of rats and mice which owe their efficacy to strychnine; but we prefer to allow this article to be so far incomplete to advising our readers to use this fearful poison. C. W. Quin.

CYANIDE OF POTASSIUM A POISON FOR ANTS.

Having read with interest the article on "How to Destroy Ants" in The Garden (p. 196), I venture to send you our Texas plan of killing these insects. Ants are the greatest permanent evil, agriculturally and horticulturally, in Central and South-western Texas; they are the kind known as Cut-leaf Ants, and are most assiduous workers by day in cool weather, and by night in hot summer weather. They have immense underground towns or head-quarters from 3 ft. to 10 ft. deep, with communicating subterranean passages and depôts 100 yards distant. They strip off the leaves of every green thing, cutting them into ½ in. pieces and carrying them erect and edgeways to their nearest station, one army hurrying forward empty and another returning laden. The amount of mischief they do, particularly to shrubs and small trees, is enormous, and they are most difficult of eradication. We find flooding with water the most effectual means of destroying them, and too often the most impracticable, for two reasons; first, because these creatures with the spent leaves and earth bank up their holes so as to ward off the water (if there should be a knoll in the field it is sure to be an Ant-town); secondly, because of the scarcity of water. We cut deep channels towards the Ant-towns, so that when rain comes it may run along these ruts and flood the Ants, but it is frequently a laborious and often an impracticable method. Our nurseries contain some 60 acres, and on this space alone we annually use 100 dollars' worth of Cyanide of Potassium as Ant poison. The mode of preparation is as follows:—Dissolve three or four lumps about the size of marbles in a gallon of water, and every morning and evening pour three table-spoonfuls of this mixture into the various working holes. The fumes kill all the Ants that cross it for an hour or two; still it only keeps down their numbers, and never completely eradicates them. A man in our county has a patented machine for destroying them by injecting sulphur fumes into their holes, charging fifteen dollars for fumigating each town. It is an excellent but expensive plan, and requires repeated perseverance to be effectual. William Falconer.

Brenham, Texas.

VALUE OF LEAVES AS MANURE.

Attention has been called in "Science Gossip" to the decay of trees in Hyde Park, where it is stated the leaves and fruits of the trees in question have been carefully swept away from year to year without substituting any manures in their place. As an evidence of how much nutrition there is in decaying leaves, fruits, and seeds, the following analyses are given.

FRUITS AND SEEDS OF TREES:—

	Potash.	Soda.	Magnesia.	Lime.	Phosphoric Pentoxide.	Sulphuric Trioxide.	Silica.	Chlorine.
Horse Chestnut	58·9	...	0·5	11·6	22·4	1·4	0·2	6·4
Ditto, green husk	76·4	...	1·0	10·0	6·3	1·4	0·6	5·6
Acorns	64·5	0·7	5·4	7·0	16·2	2·8	1·1	1·7
Beech Mast	22·8	10·0	11·6	24·5	20·8	2·2	1·9	0·5

LEAVES:—

	Potash.	Soda.	Magnesia.	Lime.	Phosphoric Pentoxide.	Sulphuric Trioxide.	Silica.	Chlorine.
Horse Chestnut (Spring)	38·8	...	3·9	21·3	23·4	6·0	2·9	3·8
Ditto (Autumn)	19·6	...	7·8	40·5	8·2	1·7	13·9	4·1
Beech (Summer)	18·5	1·8	8·6	36·5	7·8	3·1	15·2	1·2
Do. (Autumn)	5·2	0·6	6·0	44·9	4·2	3·7	33·9	0·4
Oak (Summer)	33·1	...	13·5	26·1	12·2	2·7	4·4	0·1
Do. (Autumn)	3·5	0·6	4·0	48·6	8·1	4·4	30·9	...
Scotch Fir (Autumn)	10·1	...	9·9	41·4	16·4	4·4	13·1	4·4
Spruce (Autumn)	1·5	...	2·3	16·2	8·2	2·8	77·1	...

It is obvious from these Tables that a constant supply of nutritious material is furnished by fallen leaves and fruits, and that they are beneficial as manure. We have only to point to the luxuriant vegetation found in woods where the leaves are thick on the ground as a proof of this. Here Nature supplies her own manure, and the broom of civilization is not there to sweep it away, and make clean at the expense of life.

Vegetable Marrow Preserve.—Vegetable Marrows may be preserved as follows:—Mix together 4 lb. of the fruit, peeled and cut up into small pieces; 3 lb. of white sugar, about ½ oz. of ground Ginger, and the peel of a large Lemon cut up small and with the juice squeezed in; boil this mixture for nearly two hours, and it will set firm when cool; it will keep for a year or longer. When properly mixed it makes a preserve of the most delicious kind, and one which would puzzle any one not acquainted with its constituents to tell what it was. Now that fruit is dear and scarce, this cheap preserve is well worth attention.—D.

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

Early last month there was a small, but influential and representative, gathering of horticulturists when I proposed that, in view of the Royal Horticultural Society having soon to be reconstituted, a committee be formed for the purpose of bringing in suitable Fellows to join the society when reconstituted; the annual subscription to be £1 1s.; the committee to be headed by the editors of the four leading London gardening papers. After some discussion it was resolved "that, seeing the difficulties in which the Royal Horticultural Society is placed, and believing that there is a desire in the country generally to support it, a committee be formed for the purpose of obtaining the aid of horticulturists as guinea subscribers." All present joined the committee; the resolution was placed in my hands to work, in the first instance, with the condition that names should not be published till the list was a long and influential one. A suggestion was made as to a subscription to meet expenses, but declined, as those who pay their way have a freer course. Backed by the above resolution, I wrote out an appeal, which was then lithographed in the following form:—

Reasons for Joining the Royal Horticultural Society as Fellows, Paying a Guinea Subscription.

The Society is doing important and useful work, which benefits all who value their gardens, or who care for fruit, vegetables, or flowers. Its scientific committee is now the recognised authority on all subjects connected with plant life, disease, and plagues, and does much other valuable work. Its fruit and floral committees examine new fruits, vegetables, and flowers, work which can only be done by a great central society; their judgments, immediately published by means of the gardening press, are now received with respect, and acted upon throughout the country. In the Society's garden at Chiswick, flowers, fruit, and vegetables are grown side by side, are tested, and judged by the highest authorities, and troublesome synonyms got rid of. The Society, being relieved from the heavy charge of South Kensington, will have only Chiswick Garden to keep up, and to provide for shows and committee meetings, if possible, at South Kensington, otherwise in the neighbourhood; the great country shows will be self-supporting. The guinea subscription will enable good horticulturists to come into the Society from every corner of the kingdom. It is hoped that some of the old supporters of the Society, who have long paid their four-guinea subscriptions, will, at least for a time, continue to do so, and that some wealthy and enthusiastic horticulturists will join their number. The subscribers of not less than four guineas will be called Patron Fellows. As soon as the Council of the Royal Horticultural Society can arrange with her Majesty's Commissioners of 1851, in the interest of the debenture-holders the lease of the South Kensington Garden will be surrendered, and it may be expected that the subscriptions of those Fellows who paid to get the exercise ground for their children will be discontinued; it is, therefore, most desirable that new Fellows should be in readiness to supply their places. It was lately suggested to form a large and influential committee, headed by the editors of the four leading London horticultural journals (to show unanimity of feeling at least in the leaders). This committee to bind itself to nothing but to aid in bringing in guinea Fellows when the Society is freed from its present incumbrances. Three out of the four editors have given their names, the fourth, being secretary, of the Society can hold no other position. Very influential gardening names have been already received, and are constantly coming in. It was decided not to publish names till the list was a very long one. The privileges, which can at present be stated as accruing to the guinea fellowships, are—Admittance to all the Society's shows in London and in the provinces, and to all minor exhibitions of fruit and flowers held at the fortnightly committee meetings; and daily admission to the Chiswick Gardens (Sundays excepted).

[If approved, please cut off and enclose.]

I, the undersigned, authorise you to add my name to the list of Fellows of the Royal Horticultural Society, paying an annual subscription of one guinea, upon the undertaking that I incur no further liability.

I further consent to my name being placed on the list of the committee now being formed to aid in obtaining a large accession of Fellows at the same rate of subscription.*

Signature
Address
Date

To G. F. Wilson, Esq., Heatherbank, Weybridge Heath.

While writing for and receiving the names of many of the best known horticulturists in the country—men whose names are household words to those who have studied their gardens—I began an experiment easily within my own compass, and yet one which, if successful, would give a conclusive practical fact, and besides act as a spur to other districts. I tried how many owners of gardens within a walk of here would show that they valued them enough to give a guinea subscription to foster the science which improves them; I began with those of the highest rank among my immediate neighbours; almost all round here have joined the committee; some who did not passed the paper on to likely friends, while many not only joined, but gave the names of several friends whom they would bring in. I have received a note from a well-known Orchid grower, saying:—"I think I can manage another dozen." You have been good enough to let me plead the cause of guinea fellowships in The Garden since 1873, so I have had time to prove the ground, though till the last month I have sought for only a comparatively few representative opinions on the subject; but now I have facts sufficient to show to any understanding man that if we heartily canvass for suitable guinea Fellows, we can get 5000, 10,000, and, I believe, in the future, 15,000 Fellows if desired. It is an old story that people think little of paying a penny for a paper, a shilling for an admission, or a guinea for a subscription, but I was hardly prepared for the number of people, some of them first-class men of the world and of business, who when joining themselves, and promising aid, have said, with a guinea subscription for such an object, you can get any number of subscribers you like. I believe that a society for horticulturists founded on a guinea base, helped, as I hope it will be, by not a few Patron Fellows paying four guineas, will have strength such as we have never known, and be the test for horticultural science, and for all the different interests those of amateurs, gardeners, nurserymen, and newspaper proprietors.

George F. Wilson.

Heatherbank, Weybridge Heath.

* This paragraph to be struck out if there be an objection to join the Committee.

The question of reconstructing the Royal Horticultural Society is beginning to attract attention. It is high time that it should do so, and that some definite scheme should be prepared before the annual meeting of the Society in February next. If horticulturists throughout the country could only agree upon the principles on which this could be best effected, it would materially strengthen the hands of the Council in their negotiations with the Commissioners. It is the belief that the Society is past resuscitation that has induced the Commissioners to treat it in the cavalier manner they have done lately. I beg to enclose the outline of a scheme as a basis on which this reconstruction could be effected. In doing this I have no wish to put it forward as the only one likely to answer; it is solely my own idea, which I beg to submit for consideration in conjunction with others that may be proposed.—Alfred S. Churchill.

The following is Lord Churchill's scheme above alluded to:—1. Bye-laws to be altered. 2. Fellowships £2 2s., no entrance fees. 3. Associates, £1 1s. 4. Gardeners in the employment of Fellows, 10s. 6d. 5. All voting power to be confined to Fellows paying £2 2s. 6. Provincial shows to be encouraged. 7. Quarterly Journal to be published and supplied gratis to Fellows; Associates to pay half price. 8. Fellows, Associates, and subscribing gardeners to have free admission into Chiswick Gardens and to all shows, either in the provinces or in London, given or promoted by the Royal Horticultural Society. 9. Fellows and Associates to have the power of admitting friends to Chiswick, either by order or personally. 10. Provincial Horticultural Societies subscribing to the Royal Horticultural Society £5 5s. per annum to receive two silver and two bronze medals; also copy of Journal. Ditto subscribing £3 3s. to have two bronze medals and copy of Journal; and so on for every £5 5s. or £3 3s. subscribed. 11. The President or Secretary of subscribing societies to be an *ex-officio* Fellow of the Society during the time he may continue to hold his office, and to vote at all meetings on behalf of his Society. 12. The Secretary of the Royal Horticultural Society to open communications with foreign horticultural societies, and to publish a precise copy of the correspondence in the Journal. 13. Shows and meetings to be held in London by arrangement with Her Majesty's Commissioners. 14. Scientific Committees to be held as at present, and verbatim reports of proceedings to be published in the Journal.

Red Lead a Cure for Clubbing.—During this season I have been greatly troubled with clubbing amongst the several varieties of the Cabbage family, for the removal of which I have tried sundry remedies. The following treatment I found to be quite successful:—Having planted seven rows of Brussels Sprouts by way of experiment, I made a paste of equal parts of loam and manure, to which I added some red lead, mixing all well together; the roots of two rows of the plants were covered with the paste, exposed to the sun for an hour, and then planted; the plants in these two rows are quite as large again as the others, and are all of equal size, while the remaining five rows are clubbed, and they seem to diminish instead of increasing in size.—W. S. Gillett, *Weybridge Heath.*

Seakale Culture at Gunnersbury.—In the mode of cultivating this vegetable, Mr. Richards, the gardener at Gunnersbury, differs in some respects from most private growers. Remarking the

other day on the healthy and vigorous way in which the foliage was produced on the plants, I was informed that as soon as the crop is cut, and the pots, &c., are removed, the crowns, or rather stumps, are cut down 2 in. or 3 in. below the surface of the soil. The ground is then hoed over, in order to fill up the holes and eradicate weeds; and this is all the attention they receive until forcing time comes round again. The foliage is now, of course, beginning to die down, but at the time of my visit (Sept. 20), this piece of Seakale was without exception the finest I have ever seen in a private establishment.—S.

A FUNGUS FORAY AT SHOBDON COURT.

A Fungus foray, connected with the Woolhope Club, recently took place at Shobdon Court, where a cordial reception awaited the fungologists who attended the foray. The grounds were first visited, where the grouping of the trees and their great variety were much admired. Among them were some magnificent Oaks and splendid Sweet Chestnut trees, but there was not time to measure them; on the lawns are some Cedars of Lebanon of truly remarkable size; one trunk broken off by some dire calamity at about 25 ft. high, but with a yet perfect bole, gave a fair measurement of not less than 18 ft. 2 in. in girth at 5 ft. from the ground; but even this tree was surpassed by one in much more perfect condition on the lower ground, for this girthed no less than 21 ft. 10 in. at 5 ft. from the ground, though lower down it was somewhat less. These trees are certainly the finest Cedars in Herefordshire, and there is some reason to believe that they were planted about the year 1788, when the Cedar tree seems to have been first introduced into that county. The Beech trees at Shobdon are also very fine, but alas! upon some of them the Agaricus (Armillaria) mucidus, in all its elegance, met the sharp eyes of the botanists, for it but too surely indicates the commencement of decay. There is a very fine yellow Horse Chestnut (Æsculus flava) on the lawn, in close proximity to a beautiful deciduous Cypress; it is, however, only mentioned now to note how completely the tree has become the prey of the Mistletoe. All the other trees and lawn attractions must be passed by, for the "Fungus Foray" was the real purport of the gathering; indeed, it had begun already, for several of the gentlemen were hunting like truffle dogs under the Beech trees. The visitors quickly spread over the hill, and all steps were first turned towards those well-known arches of so great an archæological interest which stand in the park. Here the ground was strewn all over with the orange-tawny caps of the Orange Chanterelle (Cantherellus aurantiacus), which grows so gracefully, and has usually gills of an orange colour so deep and pure, that it is impossible to help picking them again and again in simple admiration. Many of these plants, however, showed pale gills, which are much more rare, though by no means so pretty. Among the Grass here were also gathered Russula alutacea and R. rubra and several of the milky Agarics, Lactarius insulsus, rufus, and subdulcis. Polyporus lucidus was likewise found by Mr. Berkeley growing from the bole of an Oak. It would take long to tell of all the various "finds" the day afforded, for the woods on the brow of that long hill are rich indeed in rare kinds. Here was found for the first time in Herefordshire Clitocybe clavipes, a graceful Agaric, with the stem thick at the base, as its name indicates; the little bird's-nest fungus Crucibulum vulgare, whose spores resemble eggs in a miniature nest, was also found. There was the beautiful Fly Agaric A. (Ammonita) muscarius, upon which the Russians love to get tipsy, with its bright crimson top speckled with white, the rare Ammonita mappa, and the graceful, but foul-smelling A. phalloides. Dr. Bull gathered a pretty specimen of the rare Leptonia enchrous with its bright violet gills. Mr. Griffith Morris found the curious Marasmius Hudsoni; Mr. Howse, Boletus striæpes, and Lord Bateman himself—a fungologist for the nonce—gathered a specimen, fine and rare, of Boletus badius, which was most carefully treasured to sketch in memory of the foray. Boletus edulis, edible as its name implies, was found in abundance, and some of it gathered for cooking; and many other interesting kinds, whose value a close study is required to determine. The view from the summit of the hill, on the top of the avenue, was very varied and extensive. The height of the hill at this spot was pronounced to be about 700 ft. above Hereford, or nearly 900 ft. above sea-level; and from this point the party separated into groups, and pursued their several ways through the extensive woods, all meeting again at the mansion. The weather was brilliant, the scenery most beautiful, and the kindness and attention to every one present such as to make the day ever remain a bright spot in the annals of the Woolhope Club. S.

HORTICULTURAL EXHIBITION AT GILMORE'S GARDEN, NEW YORK.

The garden in which this show was held could hardly be excelled for the purpose; it is just like a large conservatory, being covered all over with glass and well ventilated. The great point of attraction with Americans was the table, or rather large circular stand, set aside for bouquets, baskets, floral designs, &c.; every evening—the main time for the attendance of visitors—there was such a crowd around this stand, that it was only by dint of hard squeezing one could get near it. The "knowing ones" were to be found criticizing their own particular favourites; some expatiating on the merits of hot and greenhouse plants, Palms, Ferns, &c., others on those of Dahlias, Verbenas, Pelargoniums, Gladioli, Lilies, and other varieties of cut flowers. On the table just mentioned were several floral designs. The one which gained the first premium was a centennial star and shield combined. The best design among flowers artistically arranged was a table, about 5 ft. by 3 ft., containing an imitation of a Franklin cent, the motto "WE ARE ONE" forming the centre, the lettering consisting of the bracts of Salvia splendens, the groundwork white Eupatorium, the thirteen links of the chain blue Ageratum, the rest being made up of Dahlias, Asters, Carnations, &c., with the years 1776 and 1876 in the corners. Bouquets were shown in all styles and sizes, but none would be called either new or striking in formation. The basket to which the first prize was awarded was composed of very choice flowers arranged loosely but not at all artistically. The best table design was a stand in three tiers festooned with Lygodium scandens. Last in this department—though not least in the estimation of the florists around New York—came the funeral designs; the one which carried off the first prize was The Vacant Chair, *i.e.*, a chair made up of Tuberoses, white Carnations, Eucharis amazonica, white Dahlias, Asters, and some splendid buds of Rose Niphetos, with a star of purple Immortelles in the centre. As to collections of plants, they consisted mostly of Palms, Ferns, Musas, and variegated-leaved plants, very few being in bloom. At this season of the year flowering plants are out-of-doors. In order to give an idea of the kind of plants exhibited, I will give the names of those in three collections, and it is really very gratifying to see such fine specimens as were shown on this occasion in a young country like America. Less than fifty years ago there was only one person in the vicinity of New York who had a greenhouse; now they are innumerable. One collection of ornamental-leaved plants consisted of Croton undulatum, Veitchi, Youngi, Weismanni, magnificum, and Johannis; Eranthemum atropurpureum; Alocasia metallica, Sedeni, and zebrina; Ananassa sativa, var.; Anthurium crystallinum; Maranta Makoyana and Wagneri; Aphelandra nitens; Dracæna Shepherdi and Hendersoni; Cyanophyllum magnificum; Dichorizandra musaica; Sphærogyne latifolia; Sonerilla Hendersoni and argentea. Among Ferns were Gleichenia Speluncæ, diameter 3 ft.; dicarpa, 2 ft.; dichotoma, 3 ft.; Pteris scaberula, 5 ft.; Hypolepis distans, 5 ft.; Adiantum Farleyense, 3 ft. Pitcher and allied plants consisted of Nepenthes lævis, phyllamorpha, hybrida maculata, distillitoria, Chelsoni, Hookeriana, Rafflesiana, Sedeni, Dominiana, and rubra; Darlingtonia californica; Sarracenia rubra, psittacina, variolaris, and purpurea; Cephalotus follicularis; Dionæa muscipula; Drosera rotundifolia and filifera. Of Agaves, Aloes, Cacti, Echeverias, and Sedums there was a fine collection, in which there are some very fine, new, and rare varieties; and an excellent display of Coleuses; cut flowers, such as Roses, Dahlias, Phlox Drummondi, Verbenas, Petunias, Gladiolus, Zinnias, Pelargoniums, &c., were all very good. Orchids were confined to a few Cattleyas, Stanhopeas, and Oncidiums. A collection of Conifers and new Japanese Maples excited great attention; as did also a miniature country residence, laid out in full detail. The fruit and vegetable department was inferior to that devoted to plants, the late, dry, hot season having no doubt impaired their growth. Apples, Pears, Peaches, and hardy Grapes were, however, tolerably well represented. Among vegetables, Egg plants and Tomatoes were exceptionally fine, the warm summer having been favourable to their growth. James Fleming.

Nassau Street, New York.

NOTES AND QUESTIONS—VARIOUS.

Autumn Leaves.—The Virginian Creeper, having experienced a summer something like that which it gets in its native country, is just now exceptionally brilliant, rivalling, indeed, in colour that of the well-known Poinsettia. I find, too, that its leaves are strikingly effective under artificial light, and that they form beautiful combinations for table decoration, with leaves and berries, which may even be considered more appropriate as autumnal decorations than the choicest exotic flowers.—James Groom, *Henham.*

Viola Blue-bell as a Town Plant.—This Viola, although somewhat unsuited for spring gardening, has been proved to be one of the best for summer and autumn blooming in London gardens, in which it withstands smoke and dust better than any other variety of Viola.—S.

A fine Autumn-flowering Yarrow.—The Achillea Millefolium rosea is certainly not a true autumn-flowering plant; but Achillea ægyptiaca is perhaps the most beautiful of all autumn Yarrows; it is handsome in habit, grows about 1 ft. high, and has silvery-grey leaves, which are flattened as if pressed, and arching. Its corymbs of flowers are of medium size, dense, and firm, and clear orange yellow in colour. In short, this Yarrow is certainly the best yellow autumn flower which I possess.—Thos. Williams, *Ormskirk.*

Salt for Potatoes in Dry Seasons.—I have nearly finished lifting the best crop of Potatoes it has ever been my good fortune to take up, scarcely one tuber being diseased. The crops of York Hero, Lapstone, and Haigh's Kidney, are enormous. My land for Potatoes is all deeply dug and laid up roughly, and not a particle of manure is used; but at planting time we dress it with salt and guano mixed, at the rate of 4 cwt. to the acre. Salt has a tendency to keep land in a moist state, and to this I attribute my success. I have two acres of field Potatoes that were always grown on land that was manured, and the Potatoes were always small; but this season, after salting, they are large and good. The haulm now (Sept. 23) is quite green and fresh.—R. Gilbert, *Burghley.*

Botanic Garden, Mauritius.—We are glad to learn from the Mauritius "Commercial Gazette" that Mr. John Horne, F.L.S., who for a long time has most successfully fulfilled the duties of Director of the Mauritius Botanic Gardens has been confirmed in the appointment. This promotion we believe to have been thoroughly well earned.

No. 257.] SATURDAY, OCTOBER 21, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

AUTUMN NOTES ON A ROCK-GARDEN.

SPRING and early summer are certainly the seasons when a rock-garden is most attractive, and great care is required to prevent it from becoming almost an eyesore late in the summer and autumn. For this reason it is generally advisable to have it in a somewhat retired position, for the attractions of the best Alpine and rock plants consist in delicate beauty and refined colour rather than in prolonged and brilliant display. It is to be feared that many who were induced by the enthusiasm and well-directed efforts of the author of "Alpine Flowers for English Gardens," to design and plant after his directions, have been somewhat deterred by the results in their hands or in those of their gardeners. So many seasons have to elapse before some of the choicer species develop from the puny nurslings which come from tradesmen's propagating beds into well-established plants, so many of these nurslings are lost from immediate transference from a well-sheltered frame to a rockwork however well constructed, or are overrun and destroyed by more vigorous species, that the spirits of not a few amateurs have been daunted, and rockwork is in danger once more of falling into disrepute. Experience however, as with others, brought its proper results, which can never be obtained in like measure from book lore. one of the most important things to bear in mind in planting and managing rockwork (taking for granted its proper material and construction) is to avoid planting many species indiscriminately among each other. Rather consent to have a rock bank somewhat bare for a season or two than have to root up choice plants just as they are developing into proper proportions. A plant of Phlox subulata, or Nelsoni, for instance, should measure a yard across each way, and its true character and beauty are not forthcoming till it approaches these proportions; but probably four or five years must elapse before it reaches this size, and during that time it should not be overhung or encroached upon by neighbouring plants; least of all should annuals be sown temporarily to fill the gaps—their rapid and luxuriant growth exhausts the soil in one season more than strong Alpine plants could do in five. Patience, judgment, and unremitting attention in watering and weeding will have their reward in time, but the process cannot be hurried. Once established a rockwork is a constant source of enjoyment; even in October, when at its worst, there are a few beautiful and interesting flowers. Cyclamen hederæfolium has been unusually good this year, and is still well in flower. Convolvulus mauritanicus is a delicate lavender-blue kind—attractive just now on dry elevations. Sedum spurium (the crimson variety) is showing a second bloom, and S. Sieboldi is beautiful both in flower and foliage. The ever-blooming Linaria alpina is still gay, and the quiet, but lovely, clusters of Androsace lanuginosa have stood the late storms of rain and wind as well as Buttercups. Colchicums are not well suited for rockwork, as the foliage in spring is too luxuriant, but Crocus speciosus, which is just over, does well. Campanula garganica closes the list of flowers, but all the crustaceous and mossy Saxifrages are in the highest beauty of foliage. In the herbaceous borders Mr. Harpur Crewe has noticed some valuable species in last week's GARDEN (see p. 380). To these may be added as in bloom just now Lythrum alatum, a plant of delicate beauty, with smooth, bright red stems, small, lively green leaves, and light purple flowers; it has been in flower since early in August. Aquilegia chrysantha still puts out a few flowers, having begun to do so in May. Potentillas and autumn Anemones are still good; but as fresh and full of flower as any is a Geranium which I got last year at a nursery in Bournemouth—there called G. macrorhizum; it is not that species, but a somewhat pubescent kind, 1 ft. high, with unveined, light rose-coloured flowers, which it has produced unceasingly all summer and autumn: it contrasts well with Myosotis Imperatrice Elizabeth. One of the very best autumn-flowering Roses is Dupuy Jamin. SALMONICEPS.

FORMATION OF KITCHEN GARDENS.

IN selecting a site for a new kitchen garden, convenience sometimes prevails over all other considerations, and thus a bad situation is sometimes chosen and a really good one rejected. Gently sloping ground is most suitable for a kitchen garden, inasmuch as it can be more conveniently drained than when it is on a level, and moreover it can be more fully exposed to the direct rays of the sun, and the ground consequently kept drier and warmer—*i.e.*, if the inclination be in a proper direction. In no case should the ground slope towards the north or north-east, or be directly exposed to the cold winds which we usually get from that quarter in early spring, a time when all kitchen garden crops most need warmth. A south-east or south-west aspect is not objectionable, but due south is perhaps preferable to all others. Steep slopes are, as a rule, objectionable, inasmuch as during heavy rains the soil becomes washed into the walks, the drains get filled up, and thus cause endless trouble and annoyance, Especially is this the case after continuous drought, when the ground has in consequence become almost impervious to rain; the dry surface-soil is washed away from the roots of the plants, which are consequently left bare, and instead of the plants being benefited by the rain they are left in a worse condition than they were before it fell, inasmuch as their roots, being near the surface, are more directly exposed to the fierce rays of the sun, and soon become injured in consequence. It is therefore obvious that if the ground slope at all it should only be slightly. If, however, as sometimes happens, the only site available for a kitchen garden be naturally level, it is advisable to allow it to remain so, for a time at least, but it may by degrees be brought to the desired slope when such operations as digging or trenching are being performed, by each time working the soil to that end required to be the highest. Where it happens that the ground slopes in a direction contrary to the one required, it will be necessary to bring in soil from another quarter, unless there be sufficient depth of material to permit the difficulty to be overcome by levelling. A kitchen garden should always be so far removed from the residence as to avoid the possibility of offensive smells arising from decaying vegetables being obnoxious to the inmates; and it should as far as possible be situated so as to admit of its being sheltered to some extent from north and north-east winds, and also hidden as far as possible from view from the residence or ornamental grounds. This may generally be effectively done by planting fast-growing evergreens or forest trees, and sometimes the desired shelter may be obtained by surrounding it with high banks and mounds judiciously planted. When selecting trees or shrubs for this purpose, preference should be given to those kinds that appear to thrive the most luxuriantly in the immediate neighbourhood. The extent of ground to be devoted wholly to vegetable culture must, of course, depend upon the demand. Nothing less than an acre will suffice for any residence except, perhaps, a mere cottage. The number of people to be supplied with vegetables in season must be taken into consideration, and also the climate and soil. Probably fourteen may subsist on the produce of an acre where it is not expected to furnish more than an early crop of Potatoes. Another consideration is the means allowed to work the garden—a question affecting production quite as much as extent. It is much better to manage one acre thoroughly than to have two acres ill-managed. When it is intended to enclose the ground by walls, it should be remembered that it costs less, proportionally, to wall in two or three acres than it does one acre, and at the same time there is an extended wall surface for fruit trees. If the ground be not all required for vegetable crops, it can be employed in other ways. As to plan, the simpler it is the better. A parallelogram running east and west in such a way that the greatest extent of wall surface and borders may have a south aspect, is the usual and most approved form. If walls be employed they should not be less than 12 ft. in height. The north wall might be made considerably higher than this with advantage—perhaps 16 ft. or 18 ft.—the east and west walls descending by ramps from each corner towards the south. This would not only increase the sheltering power of the walls, but would afford more room for training fruit trees upon them, a 12-ft. wall being too low for many kinds of fan-

trained trees. When the area enclosed does not exceed more than three or four acres, an intersecting or middle wall is not to be recommended, as it necessitates a further sub-division of the ground and more walks, where these are thought necessary, and reduces the cropping space; but in a six or eight acre garden such a wall is beneficial for the shelter it affords from cold winds, the boundary walls under such circumstances exerting hardly any influence in the central portions of the garden, over which the blast sweeps as over an open field. Within the walls the ground need only be divided into four quarters by well-made intersecting walks communicating with side-walks, which should run entirely round the square, leaving a 12-ft. or 14-ft. border between them and the wall. It has happily come into practice of late years to separate the vegetable and fruit gardens entirely from each other, and where this can be conveniently done a decided advantage is gained to both classes of produce. The tillage of the soil required for vegetable and fruit crops is of a widely different character, for whilst the vegetables are benefited by constant digging, trenching, and manuring of the soil, the fruit trees are often injured by such operations. It is almost, in short, impossible to cultivate a vegetable garden properly where fruit trees exist, without injury to their roots. Manure constantly applied near their roots is often productive of evil results. It is said by many to produce canker; one thing, however, is certain, that it has a tendency to promote rank growth, which most people are agreed is inimical to fruit bearing, unless in the case of old worn-out trees. Where the vegetable garden is separate from the fruit department, walls are seldom used, nor are they necessary, for if sloping banks be thrown up all round and planted with a hedge, they answer admirably for early vegetables, and that side upon which the sun has no power can be used during summer for shade-loving subjects, such as Cresses, Salads, &c., or it will answer for many crops that are required to be retarded. Indeed, whatever aspect may be required for each individual subject when banks are used, they can be accommodated.

S.

Orchids in Flower.—The Orchid-houses in Messrs. Veitch's Nursery at Chelsea are now well worth a visit. On a medium-sized plant of Oncidium ornithorhynchum I counted from thirty to thirty-five long and graceful flower-spikes, all thickly beset with beautifully marked, sweet-scented flowers; associated with this was also a fine specimen of Odontoglossum grande, on which there were no fewer than fifty perfect blooms, many of them measuring from 5 in. to 6 in. across. Odontoglossum Alexandræ was also in fine condition, many of the plants bearing spikes of flowers of enormous size, and of the purest white, richly spotted with crimson. Another floral gem was Pleione lagenaria, several plants of which were growing in 16-sized pots, the surfaces of which were entirely covered with flowers on stems not more than 1 in. in length. The same collection also contained Cattleya exoniensis in excellent condition, several plants of it bearing as many as six and seven stout spikes, furnished with five or six large and gorgeously-coloured flowers. Cattleya gigas was also flowering freely; as was likewise Masdevallia Davisi, small plants of which were covered with multitudes of soft, waxy flowers, of the richest golden yellow; this variety appears to be the most floriferous of all the Masdevallias; the grandest of all was, however, the beautiful Vanda cœrulea, a fine plant of which was bearing five flower-spikes, measuring from 3 ft. to 3½ ft. long, and all gracefully studded with lovely, pale blue flowers. In addition to these may be mentioned Cattleya labiata and C. Dominiana, both of which were flowering freely; also two new Lady's Slippers, not yet in commerce. The Nepenthes-house is also very attractive, hundreds, I might say thousands, of Pitchers of all sizes being suspended from hanging baskets, many of them large enough to hold at least a quart.—S.

Drimys Winteri.—This handsome-foliaged tree, belonging to the family of the Magnoliaceæ, and a native of Chili and the Straits of Magalhaens, whence it was first brought to Europe by Captain Winter nearly 300 years ago (1579), and specially interesting as furnishing the medicinal bark known as Winter's Bark, which both in appearance and properties resembles Canella Bark, but is of a darker colour internally, and possesses the properties of a stimulant and aromatic tonic, has proved itself to be perfectly hardy at the Botanic Gardens at Glasnevin, where, considerably to the surprise of the learned curator, Dr. Moore, it has withstood, quite unharmed, the frosts of a couple of winters in the somewhat severe climate of Dublin.—W. E. G.

NOTES OF THE WEEK.

Rock Knotweed (Polygonum vaccinifolium).—This neat trailing plant is full of flower now in the rock-garden. Among dwarf free-growing trailers for banks and the rougher parts of the rock-garden, few plants are more useful, and it is in Scotland, at all events, the most abundant blooming of rock plants in autumn. It is free and hardy enough for the wild garden, where there are rocky points or bare sandy or stony banks to embellish.—J. O.

Flowering of Yucca quadricolor.—Several plants of this Yucca are now in flower in the open air in Messrs. Veitch's Nursery at Chelsea, and many more are preparing to bloom. This abundance of inflorescence is doubtless owing to the exceptionally hot and dry weather to which the plants have this summer been subjected.—S.

The Winter Cherry.—This is no mere curiosity, but a really effective plant if properly dealt with. I know it is valuable for house decoration now, and later, when the berry-covers have become skeletonised; but I now allude to its brilliant distant effect as the leaves begin to drop off, exposing the fruit, or rather its calyx-coverings. A well-placed broad group on a rough, semi-wild bank, might be very effective. The plant seems to thrive on stiff, loamy, or sandy soils, and is one of the old-fashioned plants that ought to have a place in every garden.—V.

Open-air Grapes.—Notwithstanding the heavy rains which we have recently had, out-door Grapes have ripened well on sunny walls in the southern and south-western suburbs of London, and especially at South Kensington and Brompton, where we have tasted perfectly ripe and well-flavoured clusters of Black Frontignan, Royal Muscadine, and Black Hamburgh, all grown on open walls. One of the most prolific of all out-door Grapes is the Esperione, a Vine of which has ripened a good crop on a south-western aspect at Upper Tooting; but its flavour is not so good as that of the kinds just named, although it is useful for wine-making.—B.

Ornamental Appleworts.—I regretted that Mr. Gordon, whose extensive knowledge of trees is of great value to the readers of The Garden, did not last week give us the names of the varieties of the common Apple and Pear which have the handsomest blossoms, or which are for any other reasons valuable as ornaments. It may be added that the fine tree figured is fortunately now becoming common in our nurseries, and will, it is to be hoped, be planted as extensively and as tastefully as it deserves to be.—W.

A Beautiful Autumnal Effect.—One of the most charming things I have for a long time seen is a mass of the common old variegated Aucuba, with two of the large purple Clematises, clambering through and over it. This may now be seen in Miss Hope's garden at Edinburgh, the Clematises being yet (Oct. 15) in fine flower. The Clematises are as free as if in a hedgerow, and do not cover the bush regularly, but twine into purple groups and wreaths, leaving broad patches of the Aucuba clear. There is only one mass so treated, and that is quite enough. Such are the effects we should seek in gardens; it is to be hoped, however, that nobody will make a ribbon border with the same plants.—R.

Satin Poppyworts as Autumn Flowers.—The fine Meconopsis Wallichiana is now very beautiful on the rockery in the Edinburgh Botanic Garden, the specimens being between 4 ft. and 5 ft. high. They are pillars of glossy, gold-stamened bloom and large, drooping, unopened buds. Probably the approaching cold will prevent many of the buds from opening. The late flowers would open well in a cool house. From the peculiarly stately port of the plant, and its abundant bloom in autumn, it is one of the best that could be grown specially for the conservatory at that season. The plants could be started in the open air in summer, and placed under protection early in October.

Fruits at the Philadelphia Exhibition.—Mr. Charles Downing writes to us from Newburgh as follows:—I visited the Centennial some two weeks since, from the 11th to the 16th of September, the week for the show of fruits, which probably was the largest exhibition of fruit the world ever saw at one time. An annexed building, 200 ft. square, was erected for the purpose, and this was nearly filled with fruit of all kinds, and from almost every State in the Union and also Canada, which contributed a fine collection. The state of Iowa had the largest quantity of fruit, mostly Apples. During the hot weather the number of visitors varied from 12,000 to 25,000 daily, but since the cool weather began the number has increased rapidly; the first day I was there over 60,000 entered, and the second day over 80,000; and one day last week—a State day—over 250,000 paying visitors were admitted. Each State, not all but several, or all who wish, has an appointed week, or two or three days in that week, when the Governor of the State is present and gives a short address. The day above named was Pennsylvania Day. On Saturdays a half-price day (25 cents. each), the visitors are the most numerous.

THE INDOOR GARDEN.

LILY OF THE VALLEY AT HOME AND IMPORTED.

This universal favourite delights in partial shade and moisture, and in a rich light soil that can be readily permeated by its fibrous roots. Naturally it is found growing in the valley sheltered by a cliff, and in the forest luxuriating under trees, from both of which positions we may glean something respecting its requirements. This Lily possesses at certain seasons such an unpretending aspect that it might be passed over without particular notice by the general observer, yet no plant is held in higher estimation for the many decorative purposes for which flowers are applicable. It may justly be said to possess attractions peculiarly its own, as it is not the brilliancy of its inflorescence that captivates, so much as the delicious fragrance of its simple white blossoms, which are so elegantly supported upon slender arching stems, nestling, as it were, amongst a profusion of bright green foliage. Whether as cut flowers or in pots, in season or out of season, it is alike acceptable, and therefore worthy of encouragement. And doubtless, with the large and increasing demand for forced flowers of all kinds within the last few years, this plant is more cared for and generously treated than formerly, as it was by no means an unusual occurrence for the Lily of the Valley to be transferred to some waste corner in the poorest of soils without the slightest attention; consequently, the plants suffered materially, and the flowers were poor indeed, compared with what they have of late years become under more generous treatment. As to the best system of cultivation for this Lily, as is the case with all kindred subjects, there are various modes of treatment advocated by different cultivators—some holding that a poor soil favours the production of flowers, while others believe it little short of sacrilege to disturb established plantations—and as long as they produce abundant and satisfactory blooms extending over several years, with liberal surface-dressings and thinning out of the shoots, nothing can be gained by disturbing them. Upon the other hand, our Continental neighbours, either by superior skill, soil, or climate, or the whole combined, have thoroughly eclipsed us in the culture of this plant, and attained a well-merited celebrity for magnificent clumps which are annually imported in great numbers, and which are far superior to our own for early forcing, the necessary ripening being accelerated by increased warmth of climate; nevertheless, these advantages are not the sole cause of superiority of development of the Lily of the Valley, and need not deter us from persevering in our attempts at improved culture, for we have numerous proofs that Lilies of a superior character can be cultivated in our own gardens. It is so simple and accommodating in its habit as to succeed in almost any kind of soil, the depth of which is not of much consequence, so long as an uninterrupted supply of nourishment and moisture is afforded throughout the growing period. The best situation in which to plant it is where it will receive partial shelter and shade, either from wall, fence, or trees; at the same time I would mention that I have found it advantageous to have a plantation of Lilies of the Valley upon a south aspect for the sake of earliness and producing them in succession, for by this means blooms may be gathered a fortnight or three weeks earlier, particularly under shady walls, and with liberal surface-dressings of rotten manure, and an abundant supply of water throughout active growth. The chief point to guard against in such an aspect is frost, which is so destructive to the blooms, as they appear simultaneously with the leaves. I have found placing a few Spruce or other evergreen branches sparsely over the beds a very efficient protection against frost, and such a course of treatment will also be found beneficial in affording shelter and encouraging growth. I give the preference to a soft, loamy soil well enriched with rotten manure. At the same time I have seen fine Lilies grown upon rather heavy loam. In preparing loam of this texture for the reception of the plants, it will be greatly benefited by a liberal admixture of leaf-soil and sharp sand: whatever the nature of the soil, it should be moderately firm before planting. The best time to plant is early in autumn, immediately after the foliage decays, dividing and selecting the crowns singly. For permanent beds that are likely to remain for several years without being disturbed, they may be planted 2 in. or even 3 in. apart, as they do not become so soon crowded as to require thinning out. Cover the surface after planting with 1 in. or 2 in. of rotten manure, bearing in mind that thorough maturity can only be insured by repeated applications of water—manure-water being the most exhilarating. Treated thus with annual surface-dressings of manure, the beds will keep in good condition for years, years, and produce fine blossoms in abundance. When the plants become crowded with shoots they should be thinned out or, better still, lifted and replanted, for weakly, abortive crowns tend only to retard vigorous development. In order to grow strong clumps of this Lily for forcing, the general treatment may be exactly the same as that just recorded, except that the crowns should be more carefully selected, so as to insure greater uniformity; and planting in small, isolated clumps, varying in the number of single crowns, according to the sizes of the plants required, from eight, ten, or twelve single crowns closely together, will make handy clumps for pots, and these should not be disturbed for three years after planting, by which time they will have made vigorous bushes; if potted up in October and allowed to become gradually established before they are placed in heat, they will be found to force freely and to produce an abundance of their delightful blooms. These clumps may stand at a distance apart of from 8 in. to 10 in., so as to allow perfect freedom of growth; at the same time the crowns may be planted closely together in patches to suit the convenience of those who prefer to lift in turfs and bring them forward in boxes, or even place them on the bed of a forcing-pit; besides,

New Maiden-hair Fern—Adiantum digitatum (see p. 400).

they are more convenient, and can be treated more judiciously as to hardening off, &c. Complaints are often made of the difficulty experienced during mid-winter in getting this Lily to start into growth, and I have frequently seen batches of it stand for months in heat without evincing the slightest sign of starting—but these were unprepared, immature roots, which would be worthless at any season. I find that the general vigour of this Lily is retarded by anything like hard forcing; neither is it required, as they will start into growth in a dark, close house—either Mushroom-house or shaded pits or frames answering equally well—plunging the pots, and covering the crowns, to a depth of 4 in. or 5 in., with leaf-soil, Cocoa-nut fibre, or other light material. Left thus in a temperature of from 50° to 55°, the shoots will soon appear above the soil, when they should be removed, and gradually inured to light, where they will endure a slight increase of temperature—say 60°; and should be accustomed to a cooler temperature by degrees as the blossoms expand, when they will be far more useful, and keep much longer in bloom than when allowed to develop themselves in much heat.

In breaking up old beds it is a good plan to select the strong, plump crowns which are certain to contain flower-buds, tying them in bundles of twenty or more, and potting them in pots just sufficiently large to contain the roots; these, when moderately forced, flower very satisfactorily, and are by some preferred to any other mode of forcing. There are also those who believe in old plants that are yearly forced and potted afresh before starting them; but, although fair success may with an abundance of feeding be sometimes attained by this method, I do not find that treatment so satisfactory as if the clumps have been prepared with generous treatment and careful forcing, at all times having regard that they are not weakened or over-excited by too much heat. GEO. WESTLAND.

A NEW MAIDEN-HAIR FERN.

(ADIANTUM DIGITATUM).

THIS Maiden-hair Fern (see p. 399) is a very distinct and handsome variety from Peru, creeping in habit and graceful, its tripinnate fronds measuring from 12 in. to 30 in. in length and of a soft green colour. The pinnæ are semicircular in outline and irregularly slit into segments as shown in the annexed engraving. The whole aspect of the plant is strikingly beautiful, the pinnæ being borne on a slender branched, wire-like, rachis. For this fine addition to Maiden-hair Ferns, we are indebted to Messrs. Veitch & Sons, who first exhibited it at Regent's Park on March 29 of the present year, on which occasion it received a first-class certificate. It succeeds perfectly in a moderately warm temperature, and is well deserving of culture even in the most limited collections of Ferns.

B.

Removing Offsets from Hippeastrums.—Some remove offsets from these with the view of strengthening the parent bulb; others leave them on with the view (I suppose) of having a potful as a better show. Which is the best plan?—M. P. [Some varieties of Hippeastrum are more addicted (if I may use the term) to push offsets than others, and this is the case with many of the cross-bred forms of H. pardinum, some of which I have seen send out five or six side-bulbs before they were a year and a half old. As regards the question, Should the offsets be removed? I may state that it is right to remove the side-bulbs from the main one of those plants that have not attained the flowering size; but when a bulb throws off offsets after it has bloomed, I have not found that leaving them on affects the blooming of the bulb during the next or following years. As a single bulb of Hippeastrum can only be grown to a certain size, and as sooner or later it will decay, it is better to have one or two side-bulbs to take its place. Hippeastrums may be grown into large specimens by leaving the offsets on, and any one doubting its advisability would be convinced of its correctness if they had seen a plant which I had a short time ago; it had between thirty and forty flower-spikes all open on it at once. The removal of offsets should be practised by raisers of seedlings who are anxious to see their plants in blossom, as offsets retard their flowering; but the few sent out after blossoming may be left on; of course, their number must be restricted. When removing offsets, care must be taken not to disturb the old plant, or their removal will injure the flowering more than their retention. Bulbs obtained by means of division do not, as a rule, throw off nearly so many offsets as seedlings.—J. O'B.]

FLORAL DECORATIONS FOR OCTOBER.

ALTHOUGH the flowers at our disposal during October are considerably limited, when the list is compared with those of the last few months, the deficiency is almost, if not quite, compensated by the variety of richly-coloured foliage and fruit which is obtainable at this season. The crimson tints of the Virginian Creeper are known to every one; but many are unaware of the brilliant red which the elegantly formed leaves of the wild Geranium, or Herb Robert, now assume, of the pale pink leaves of the Willow Herb, of the varying shades of red and brown which are now found on the foliage of the Brambles, of the bright yellows of the fading leaves of the Birch and Willow trees, and of many other similar unusual colours to be found amongst autumn foliage. As in most cases these leaves fall off, and consequently are not available as branches, it becomes necessary to make an artificial stalk for each with fine wire before they can be turned to account for most decorative purposes. Our wild fruits are not half so often used for ornament as they deserve to be. Perhaps the most brilliant crimson is to be found in the oval berries of the Woody Nightshade and Wild Convolvulus. Less conspicuous variations of the same colour are met with in the fruits of the Honeysuckle and the half-ripe Blackberry. The Dog Rose and Mountain Ash give us shades of colour inclining more towards scarlet, and deeper shades still are met in the fruits of the White Thorn and Guelder Rose. One of the most beautiful is the half-opened pink capsule of the Spindle Tree, showing its orange-coloured seeds within. If a contrast be required, there are many black fruits to be had, such as those of the Buckthorn, Elder, and ripe Blackberry. The following is a list of colours and plants which supply them:

Blue—Italian Alkanet, Myosotis, Salvia.
Purple—Aster, Chrysanthemum, Heliotrope, Michaelmas Daisies, Phlox, Violets.
Mauve—Aster, Chrysanthemum, Heath, Stokesia.
Pink—Antirrhinum, Aster, Begonia, Bouvardia, Camellia, Carnation, Chrysanthemum, Fancy and Zonal Pelargoniums, Fuchsia, Oleander, Phlox, Rose.
Crimson—Antirrhinum, Aster, Begonia, Bouvardia, Chrysanthemum, Camellia, Phlox, Rose.
Maroon—Chrysanthemum, Polyanthus.
Scarlet—Begonia, Bouvardia, Carnation, Lily, Salvia, Tropæolum, Zonal Pelargonium.
Orange—Abutilon, Calceolaria, Chrysanthemum, Lily, Marigold, Rose.
Yellow—Antirrhinum, Calceolaria, Chrysanthemum, Marigold, Rose.
White—Abutilon, Aponogeton, Aster, Begonia, Bouvardia, Camellia, Carnation, Chrysanthemum, Chinese Primrose, Eucharis, Fancy Pelargonium, Gardenia, Heath, Myrtle, Phlox, Rose, Stephanotis, Tuberose. W. T. T.

Chrysanthemums in Pots.—Cold nights remind us that frost is near at hand, and that it is high time that even such hardy plants as Chrysanthemums should be safely housed, or be so stationed that they can be afforded temporary shelter to preserve their buds from injury should cold weather set in. In cases where they are removed to the shelter of glass, it should be where they can have a damp atmosphere surrounding them, such as is afforded by standing on the soil of an orchard-house or Peach border, and if this be supplemented by an occasional syringing, the plants will be all the better for it. See that they are kept well supplied with liquid manure, and never allow them to become at all dry at the root, or the foliage will soon become shabby, and the blooms will not attain their full size or proper development. J. S.

Begonia Vesuvius.—In an intermediate plant-house at Harrow Weald Park, I saw the other day plants of this Begonia in 6-in. pots each furnished with from eight to ten fine orange-scarlet blossoms 3 in. in diameter. This is evidently one of the most valuable of all autumn-flowering indoor plants. In the same house many home-raised seedling Begonias were also in bloom, all of which made a fine display.—S.

THE FRUIT GARDEN.

WALL TREE PROTECTION.

ALTHOUGH this has not been on the whole a favourable year for fruit, in the gardens at Heckfield better crops of it have seldom, if ever, been seen, Pears, Apples, Peaches, Plums, and even outdoor Grapes being most abundant. At the time of our visit Peaches and Nectarines on open walls were nearly over, but the trees themselves were remarkably healthy and well furnished with fruit-bearing wood for another year. The mode of protecting these trees from early spring frosts, from cold winds, and, indeed, from very hot sunshine, is shown in the accompanying sketch, and is so simple and effectual that

Wall tree protection at Heckfield.

it well deserves a trial. All the walls at Heckfield are furnished with good, broad copings and beneath these, by means of a simple roller and pulley arrangement, a canvas blind can be drawn up and down on rafters which slope from the coping to the ground, as shown in our sketch. When drawn up the blinds and rollers are protected from sun, rain, and frost, and are thus always ready for use when required. B.

M. DUMAS' REMEDY FOR THE PHYLLOXERA.

It is well known that this Vine-devouring insect has been for some time threatening with destruction the Vineyards of France, and that unless something providential occurs, or some vigorous measures be put in force, not only to arrest the progress of the foe, but to exterminate it, the loss to France is likely to be almost incalculable. It is at present difficult to conceive that any of the remedies yet prescribed will be of any avail as a complete eradicator of the fell destroyer. Many curative means have been proposed, but surely it cannot be difficult for practical men to see that such applications over vast areas, and to such depths as the roots of Vines penetrate, cannot possibly be made effectual with anything short of complete immersion; and so insuperable is the difficulty of immersion or irrigation with even water that the idea has been abandoned. One of the latest prescriptions for checking the ravages of the pest is that of sulpho-carbonate of potassium applied to the affected Vines, M. Dumas, the proposer of this remedy, having found that in his laboratory this salt is destructive to the Phylloxera without being injurious to the Vine. It need scarcely be said, however, that it is one thing to experiment on a Vine in a laboratory, and another and very different thing to overmatch so insidious and terrible a depredator as the Phylloxera, spread as it is over millions of acres of surface where, if only a remnant of it be left, it would be still be in possession of the field. To add to the difficulty and impracticability of dealing successfully with it by this means over so comparatively great an extent of country, it appears that nothing like an approach to the amount of water required can be found, and even if it could, there is nothing better than a presumption, founded as yet on a laboratory experiment, that the remedy would prove successful. Moreover, some of the principal Vine growers of France have tried M. Dumas's remedy and assert that it is worthless. It does not (as any practical man who knows how difficult it is to soak a body of compact soil without actual inundation) reach every place where the roots of the Vines and their devourers exist, and consequently the Phylloxera very soon again asserts its supremacy. It would appear that the greater parts of the Vineyards affected form a tolerably compact district of country which lies between Montpellier and Bordeaux in one direction, and between Lyons and Geneva in the other; but the evil is gradually spreading in every direction from this centre, and especially in directions where no important river checks its onward course. Hence the importance to France of anything that would stay its course and eradicate it. From my own experience of Phylloxera in a range of Vineries, I hold the opinion that not one of the applications yet prescribed is capable of eradicating it from the Vineyards of France. The difficulty of inundating large districts with water, to say nothing of impregnating it with any salt that might kill the Phylloxera without permanently injuring the Vines, precludes the hope of any such method being successful. If an attempt be made to save the Vines by destroying the insect, there is no other choice than that of lifting and dressing every Vine with insecticide, such as that M. Dumas has prescribed. This latter course might destroy all the insects to which it might be applied; but while such an operation is being proceeded with, there are the rootlets left in the soil, with the insects and their larvæ still upon them, ready to pounce upon the Vines when their season of growth again comes round. The necessary enormous outlay for an uncertain process of this kind would be rendered little better than a clear loss. There is yet another course prescribed, and it is the introduction from America of coarse, strong-growing Vines, that are considered proof against the ravages of the Phylloxera. Granting the probability of this course succeeding, it also obviously implies an enormous outlay, without any positive certainty of success. To destroy all existing affected Vines plant American kinds, and engraft them with French wine-producing varieties, would, indeed, be a formidable and most expensive undertaking, but not too formidable nor too expensive if there were any guarantee that the pest could by such means be conquered. I feel sure that France will never exterminate this foe by any process short of stamping it out, thus facing the unavoidable loss by the only means which, to my mind, is at all likely to prove a success. True, the French talk of keeping it in check by destroying every Vine in the districts affected by it, for the Phylloxera will not live and advance on any other vegetation than the Vine; and apart from the living Vine it soon perishes. This I have conclusively proved. The destruction of belts of Vineyards will certainly prove a temporary check, just as the destruction of bridges proves a temporary check to an army; but it still leaves the enemy in the field, with other subtle means of progress. Now, instead of thus destroying, it may be, unaffected Vineyards, would it not be more reasonable, and more likely to be the most comprehensive and successful way of annihilating the pest, to strike a vigorous blow at it simultaneously in mass, from its centre to its circumference? I am very much deceived if this does not become an absolute necessity if France is to save her Vineyards. If the Government of France would deal with it as the British Government dealt with the cattle plague—that is, grub up and burn root and branch of every known affected Vine, and do it when the plant and insect are torpid, and then crop the ground for two or three years with any other remunerative crop, such as Wheat, &c., and make an allowance to the owners of all such Vineyards—there would be some reasonable hope of destroying the Phylloxera; for when the Vine dies or is killed, the parasite dies with it. This course vigorously carried out, wherever there appeared an affected Vineyard, is more likely to be successful than any half measure. It may be said that the sacrifice would be great. So it would, and must be, whatever be the measure tried; but the question is, whether in the end this would not entail a less loss than what, from present appearances, is in the end unavoidable? Of course I would hope rather that Phylloxera may be exterminated without this stamping out; but my present conviction is that it never will. Its destructive power is great and rapid, and, even with liberal rewards to induce them, those whom it concerns seem utterly powerless to discover any process that would be likely to destroy the insect without destroying the Vines.

That the Government of France has become alarmed at the danger which threatens that country, is evident from the fact that the Minister of Agriculture has issued a circular wherein he threatens with coercion any proprietor who will refuse to apply the remedy proposed by M. Dumas. The hopelessness of complying with the proposed course lies in the impossibility of getting sufficient water; and even if water enough could be got, the worthlessness of the remedy has been pointed out and insisted on by owners of Vineyards who have already tested it in their Vineyards and found it wanting. Practical men assert that there would be no end to the

remedy from its want of completeness, and that the fancied cure would be as expensive as the Phylloxera itself. As has been stated, M. Dumas proposes to circumscribe the ravages of the insect by destroying broad belts of Vineyards all around, and ultimately to "repress it by degrees." Knowing something of the habits and powers of this destructive and insidious devourer, I regard such a way of dealing with it as akin to repressing a fire by degrees; and time will show which theory is correct. D. THOMSON.

Drumlanrig, Thornhill, N.B.

LOW NIGHT TEMPERATURE FOR VINES.

I AGREE with Mr. Simpson (p. 368) that Vines can be grown with advantage in a much lower temperature than that generally advocated. This season we gave low night temperature a fair trial. The Vines submitted to it came under my care about this time last year; they looked somewhat overdone by having too many shoots taken from one spur, from four to five being the number, and by being overcrowded they were badly ripened. When starting time arrived, however, we resolved to give them every possible advantage by starting them cautiously and carefully. The first house was shut up on the 3rd of December, no heat being applied, except a bed of fermenting stable manure and loam, until the 20th of that month, when we kept the house about 50° by means of fire-heat, this being the temperature set down for our minimum; by the first and second week in January they had all "broken" well. When in flower we had rather stormy and severe weather, and on several mornings the thermometer fell to 45°, 50° to 55° being the ordinary temperature, unless on very mild nights, when the temperature increased, irrespective of fire-heat. We commenced to thin on the 27th of March, and cut the first Grapes (Grizzly Frontignan) on the 27th May, Black Hamburghs being ready the first week in June. Both flavour and colour were all that could be desired, and air roots, which were so troublesome in former years, never made their appearance. The second house we treated in much the same way as that just alluded to. The Vines in the Muscat and West's St. Peter's houses we allowed to break of their own accord, no heat being given them, except during very severe weather, till some of the shoots were 3 in. long, and at no time did we maintain a temperature higher than 55°, and on several nights the thermometer stood at 48° and 50° while they were in flower. In the Muscat-house we have Lady Downes, Alicante, and Barbarossa, all of which set thickly, Cannon Hall Muscat being the only one that was thin, but this variety is a shy setter anywhere. In the West's St. Peter's house there are Black Hamburghs which, as well as the others, were alike good, and as regards growth for next season that is strong and short-jointed. To force too vigorously would therefore appear to be a mistake. Let us take the weather for our guide; during severe weather do not be alarmed on entering a Vinery to find the thermometer standing at 50°, or even 45°—no harm will be done; on the other hand in mild weather, the thermometer may be allowed to range somewhat higher, and at all times husband sun-heat as much as possible by shutting up earlier than usual. W. B. K.

Derby.

Girdling Peach trees.—You will see, on reference to page 31 of our catalogue, a copy of which I send, that I have indicated, although by a different process, the same method of accelerating the ripening of the fruit as that described in THE GARDEN (see p. 390) by M. Chevalier. Girdling is an old process, and has been applied to Pears, Currants, and other fruits; but the great advantage obtained when it is applied to Peach trees is that succession fruiting shoots are produced below the girdle, and Peach pruning is greatly simplified. M. Chevalier's system can be applied only to espalier trees, the shoots operated on being sustained by the ties necessary for walls or espaliers; my idea of a girdle is exclusively for orchard house culture; the trees being grown either as bushes, pyramids, or standards, an incision made in the branches of these trees would probably result in breakage. The application is so simple that I did not think it necessary to give a diagram or to say more than I have stated in the catalogue, which is as follows:—"It is not perhaps generally known that a girdle of wire placed round a fruiting shoot will accelerate the ripening of the fruit above the girdle by some days; also, in most cases, the succession shoots are developed below the girdle."—T. FRANCIS RIVERS.

Mrs. Pince's Black Muscat Grape.—No Grape of recent introduction possesses so fine a Muscat flavour as Mrs. Pince. It is also one of the freest of setters and a sure cropper; but I have never been able before this season to get it properly coloured, showing that we should never be too ready to condemn a new Grape. Mrs. Pince was treated in no way different this season from last, but its colour, nevertheless, is very superior to what it hitherto has been.—R. GILBERT, *Burghley.*

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

NOTWITHSTANDING the comparatively long cold nights and continuous heavy rains to which outdoor flowers are now subjected, many plants still remain gay and attractive, and amongst them the most conspicuous consist of Asters, Colchicums, Autumn Crocuses, and the brilliantly coloured Mexican Dahlias. Among Asters the following are the most striking, viz., A. Chapmani, A. azureus, A. Novæ Angliæ roseus, A. laxifolius, and A. turbinellus, the latter especially attractive, some plants of it being covered with delicate mauve-coloured flowers produced in large, bushy panicles. Aster Reevesi, one of the best of the dwarf shrubby kinds, is also very showy just now, its compact habit and multitudes of white flowers rendering it a most desirable plant for rockwork, or for forming a conspicuous object in the front of shrubbery borders. Flowers of the tall Boltonia decurrens are still fresh and showy, as are also those of Pyrethrum uliginosum, still one of the best of white-flowered Composite plants, and one which, when grown in masses and in light open situations, has a fine effect at this season of the year. Yellow-flowering Composites consist chiefly of Helenium autumnale, H. lætifolium, H. cinereum, and H. orgyale, the last being especially attractive, and a plant which well deserves a place in every collection of hardy plants in which tall specimens are needed, its bright yellow flowers being now produced in abundance in large clusters set conspicuously on tall, stout stems, the latter being thickly clothed with green and graceful Willow-like foliage. The showy Cone-flower (Rudbeckia speciosa) is still attractive, as are also Coreopsis grandiflora and many varieties of Tagetes. Physostegia virginiana continues to produce large racemes of showy purple and flesh-coloured blossoms, and Aconitum japonicum and A. autumnale are also very charming. Fuchsia gracilis variegata forms a pretty bush at Ware's, where also may be seen Verbena montana, Veronica spicata, and V. corymbosa, all still flowering freely. The golden-yellow, Crocus-like flowers of Sternbergia lutea (the Lily of the Field) are now very showy at St. John's Wood, where likewise may be found Stokes' Aster (Stokesia cyanea), which will continue in good condition until frosty weather sets in—this, one of the most beautiful of blue autumn-flowering plants, does best in warm soils and situations. Œnothera montana, Œ. macrocarpa, and Œ. rosea continue to furnish fresh showy flowers, as do also Zephyranthes candida and Tritonia aurea. Numerous varieties of Cyclamen hederæfolium are becoming very beautiful, and to these may be added Everlastings, Armeria plantaginea, A. mauritanica, and Stachys coccinea, all of which are in good condition. Strong plants of Primula japonica are producing whorls of rosy-pink blossoms a second time this year, and many of the Salvias are still very attractive, notably, S. Pilcheri, Grahami, azurea, and patens—the rich blue flowers of which may still be found in profusion at Kew, where we also noticed Rhodanthe Manglesi, Vernonia noveboracensis, Cosmos bipinnatus, and Ximenesia encelioides, all in good condition. Amongst rock plants the most showy are, perhaps Oxalis rosea, O. alba, O. lobata, Lithospermum prostratum, and L. fruticosum. Erodium Manescavi, and Gypsophila dubia are still flowering freely on rockwork in the Wellington Nursery after having been in bloom for more than three months. Helleborus maximus is now a pretty sight at St. John's Wood, and should warm, sunny days set in, the beds will be completely covered with snow-white blossoms. Gynerium argenteum, swaying to and fro in the wind, has a noble and graceful appearance, strong plants of it sometimes bearing as many as seventy and eighty fine plumes of silvery inflorescence.

Oxalis enneaphylla.—A native of the Falkland Islands, where it grows in such abundance on banks overhanging the sea at Berkeley Sound as to cover them with a mantle of snowy white in the spring month (November). The plant grows from 2 in. to 4 in. in height, forming a tuft of digitate glaucous leaves elevated on pink petioles, and white salver-shaped flowers about 1 in. in diameter. It forms a pretty plant for cool and moist rockwork. The Kew specimen was brought to this country by the Challenger Expedition.—"Botanical Magazine," t. 6256.

Japanese Primrose
(Primula japonica).

Common Michaelmas Daisy
(Aster Tradescanti).

Rosy Evening Primrose
(Œnothera rosea).

Tuberous-rooted Oxalis
(O. Deppei).

Yellow Water Lily
(Nymphæa lutea).

Slender-leaved Helenium
(H. tenuifolium).

Sky-blue Sage
(Salvia azurea).

Dwarf Ageratum
(A. nanum).

Silvery-leaved Clary
(Salvia argentea).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

COTTAGE GARDENING.

Asparagus.

It is impossible to make land too good for Asparagus if large heads be desired, though those of medium growth are equally good in every respect except size. I have often heard the remark made by occupiers of a small plot of ground, that they should much like to have an Asparagus bed, but have been deterred from planting one on account of the expense. Of course it is possible for Asparagus beds to become very expensive, but it is by no means a necessary accompaniment, for it need not cost more to prepare the land for Asparagus than for Onions, or any other crop that requires high culture. It is not a crop that can be sown and gathered the same year, and to a certain extent that no doubt is a drawback; but even granting that three years must elapse before many dishes can be cut, if fairly treated afterwards it will continue to produce Asparagus in a satisfactory manner for many years with little cost. I know of some beds, not far from where I am writing, that are said to be nearly 100 years old, and the produce is still as fine as any grown in the neighbourhood. All things considered one-year-old plants are best to plant permanently. Conover's Colossal is the best variety, and as soon as the young growth is fairly above ground in spring is the best time to plant, although it may be planted any time up to the end of June if carefully managed. To raise young plants sow a small bed in March. If the seeds be of good quality 1 oz. or 2 oz. will produce plants enough for a moderate-sized garden; sow thinly in drills, 1 ft. apart, in well-pulverized land, and cover the seeds about 1 in. deep. When the young plants are 2 in. high, thin out to 4 in. apart; if carefully lifted, the thinnings may be planted elsewhere. During the following autumn or winter the land intended for the Asparagus beds or rows should be thoroughly deepened and enriched. A light, rich, sandy loam, of an alluvial character, is the best soil for Asparagus, but any soil, if well treated, will produce good-flavoured heads. As a rule, the quicker the growth the better and more tender will be the produce; this remark, however, most assuredly applies to other vegetables, for all are produced in greater perfection in a rich, highly manured soil. Asparagus is a strong-rooting plant, and if planted thickly must be liberally fed, and, when crowded together in narrow beds, as is frequently the case, if not treated liberally, the soil is soon exhausted, and the produce becomes weak and poor; but give it as much room as the roots can occupy—taking into consideration that it is a perennial, the spread of whose roots and branches will increase annually for many years if fairly tended—and this exceptional manuring for Asparagus need not be so rigidly insisted on. I contend that if other crops were crowded together so closely in proportion, as Asparagus generally is, the result would be so unsatisfactory as to suggest the cause of the failure and its remedy at the first glance, but as Asparagus is a long-suffering plant, sufficient notice is not taken of it; and when plants die off in the thickly-planted beds for want of light and air, excessive planting is one of the last things suspected as in any way conducive to the shortness of the crop. Whatever may be thought or said to the contrary, Asparagus delights in moisture where the drainage is free; and in porous soils I should prefer planting in trenches in single rows 3 ft. apart and 1 ft. between each plant in the rows. Planting in either 3-ft. or 5-ft. beds on the surface, with 2-ft. alleys between, may be advisable on cold, retentive land, but then all cold, wet land should be drained and warmed by deep stirring before Asparagus is planted out. If the bed system be adopted, plant two rows of plants on the 3-ft. beds, and to compensate for the rows being too close together, give a little more space between the plants in the rows, say 15 in. from plant to plant; and if lasting prolific beds be desired, this space will not be found excessive for the healthy development of the plants: on the 5-ft. beds three rows might be planted. Spread out the roots carefully and cover the crowns about 1½ in. deep. It is especially important that the roots be not injured in lifting, nor yet exposed longer than is absolutely necessary. The best way would be to open the trenches first wide enough to give plenty of room to spread the roots out to their full extent, then take up the plants carefully and plant immediately; in this way the check would scarcely be felt; if the weather be dry, a good watering would be beneficial, as well as a mulching of manure about 2 in. thick; in fact, little matters of this kind, that involve but a small amount of trouble if done at first, will exercise a great influence upon the future welfare and productiveness of the crop. I have already said that Asparagus delights in moisture when the necessary porosity is in the soil. I have seen it well grown in the sandy marshy land of the Eastern coast, where the water—strongly impregnated with salt—could generally be found within 2 ft. of the surface. It also grows very well in the Fens, where the water is sometimes even nearer the surface, but in neither of those cases is the water altogether stagnant, as its level is continually fluctuating, and it certainly does not follow that the same success would attend the planting of it in wet, cold, undrained clay. The subsequent culture consists in keeping down weeds, and applying rich top-dressings after the dead tops are removed in autumn. On porous soils salt is well-nigh indispensable, and may be applied in considerable quantities; 1 lb. to the square yard may be sown over the beds at any time during the winter when the plants are at rest; if given at any other time, half that quantity should be used. The old-fashioned plan of digging out the earth from the alleys and heaping it on the tops of the beds is very objectionable, for two reasons: first, because this annual digging out of the alleys injures, and in some instances destroys, some of the healthiest roots, and tends to restrict still further what is already too circumscribed; and secondly, the notion that Asparagus requires protection from frost has been long ago proved to be fallacious. It will be found to be much better practice to strew rich mulchings over both beds and alleys in order to encourage the roots to the utmost. If the plants have developed well, cutting may commence the third year after planting, and should be regulated according to the strength of the plants. It may sometimes be advisable when any row or bed shows signs of exhaustion from being too closely cut to give it rest for a season, accompanied by occasional sprinklings of guano in showery weather, and liquid manure may be administered with good effect. The third week in June is the time fixed by many growers for discontinuing cutting, but everything depends upon whether the position be an early or late one; by observing this and carefully noting the strength and condition of the plants, the cultivator will be prevented from falling into error. Those who are in favour of white Asparagus must of course blanch it in some way, and the plan usually adopted in this country is to cover the beds deeply with light, rich, sandy soil. The better plan, however, is to allow it to grow 6 in. above the ground-level, and then cut close to the surface. In this way the Asparagus gets its true flavour and is nearly all eatable, and there is no danger of injuring with the knife the buds just making their appearance.

Seakale.

Like the Asparagus this is a native plant, yet it is only in the gardens of the wealthy that its good qualities seem to be rightly appreciated. Its productiveness and easy cultivation ought to recommend it to any cottager on the look-out for a pleasant wholesome vegetable in the months of March and April, when other vegetables are both scarce and inferior. A sufficient number of plants to stock a fair-sized garden will be raised if 2 oz. or 3 oz. of seeds be sown in March on light, rich land. The drills should be 2 in. deep and 18 in. or 2 ft. apart. Thin out the young plants, when they have made three or four leaves, to 1 ft. apart in the rows. The thinnings may be planted elsewhere if carefully drawn in showery weather. Cuttings of the roots about 4 in. in length, planted the same distances apart, make good plants in due season, and some cultivators prefer this plan. Whichever plan is adopted, deep, clean culture, with sufficient space for the development of the foliage, is the best way to lay a foundation for the production of strong crowns on which depends the future crop. A sprinkling of salt (½ lb. to the square yard) will be beneficial in June. During its early growth on some soils the Turnip fly is troublesome, and should be kept in check by frequent dustings of lime or soot, and frequent stirrings of the soil. Remove all foliage as soon as it dies down in autumn, and cover the rows

of crowns with litter or leaves, ashes, sand, Cocoa-fibre, old tan, or light, dry earth, its object being to check the radiation of what remains of the sun's warmth in the ground, and to blanch the produce, as it grows early in the spring; and the earlier this is put on in autumn the earlier will the crowns push through, and the produce be fit for gathering. The young tender growth is ready for cutting when about 6 in. long; the longest (which may easily be seen by the upheaval of the blanching material) should be cut first. Do not cut any portion of the old crowns, as there are latent buds that will push a good second crop later on. When all the produce is cut, the blanching material may be drawn back towards the centre of the space between the rows, and lightly forked in. In the course of a couple of years the accumulations thus formed can be used for purposes of blanching, if of a light friable nature. Old roots frequently throw up too many shoots in spring, after the produce has been cut; those should be thinned out to two or three at the most, so as to give room for the foliage, as the size of the future crowns depends upon having well-developed leaves. During summer all flowering shoots should be removed when young, except a few seeds may be required. Those young shoots form a wholesome dish, either peeled and tied in bunches, and cooked like Asparagus or simply as Greens. Under good culture, roots strong enough for bearing, where sown, or for forcing may easily be grown in one season, and Seakale is one of the few vegetables that is really improved by forcing. There are various ways of forcing Seakale; the best and cleanest is to make a hot-bed that will produce a temperature in the frame between 55° and 60°. The frame may be simply a few rough boards nailed together and covered with a shutter or mats, as of course light and air must be excluded. The roots may be placed in the frame about 3 in. apart, and all the interstices filled up with light, rich soil. A Mushroom-house, or any shed or building from which light and air can be excluded and a genial temperature maintained, will answer the purpose, but if the temperature exceeds 60°, the growth will be weak and spindly. Another way of forcing is to plant the roots or seeds in patches 2 ft. or 3 ft. apart, three plants in a patch in a sort of triangle, and so arranged as to distance from each other that one pot will cover each patch. Of course, proper Seakale pots, with movable tops or lids, are the best, but large flower-pots, or old boxes or tubs, will do for makeshifts. A certain number of patches could be covered with warm manure and leaves, using a large proportion of the latter; if too much rank manure be used the bed may get too hot, and the flavour of the Seakale be spoiled. By covering a few fresh pots every fortnight or three weeks a succession can easily be kept up through the winter, and the late spring crop may be simply blanched where grown without forcing. A plantation of Seakale, when only slightly forced, will last many years without renewal, and need not be planted in a conspicuous place. E. Hobday.

CULTIVATION OF BEETROOT.

In most establishments Beetroot is used all the year round for many purposes—in salads or for garnishing dishes for the table, &c.—and, therefore, its culture deserves to be encouraged in every possible way. A deep sandy loam, trenched to a depth of at least 30 in., suits it better than any other kind of soil, and if poor, it should have been well manured for the previous vegetable crop. In such soils, the evenest and cleanest roots are produced, but Beet will also succeed on calcareous soils, if of sufficient depth. Heavy or stiff loams intended for its growth should be thrown up into ridges before winter sets in, so as to get well pulverised, and, if very heavy, a light dressing of coal ashes worked into them would prove advantageous, and materially assist in producing clean roots; stable manure should not be added to the soil unless it is trenched deeply, when it may be placed quite at the bottom of the trench; if otherwise, as soon as the roots reach it they become forked, instead of making straight, well-shaped roots; therefore, if the soil be so poor as to require manure, I would recommend a sprinkling of guano, or superphosphate, to be applied to it between the rows as soon as the plants are fairly established.

Situation, Time, and Mode of Sowing.

Beet must have an open situation; it never grows or looks satisfactorily when grown under the shade of fruit trees, a position to which it is often relegated; but why this should be the case, I am at a loss to imagine, for most varieties of Beet are ornamental as well as useful, and one would, therefore, suppose that a conspicuous place would be selected for them. The time for sowing varies from the beginning of April to the middle of May. In the majority of soils, about the 20th of April will be found to be the best time; if sown too early, especially if the soil be rich, it is liable to run to seed, or the roots to grow too large—medium-sized roots being always most highly valued, more particularly for salading. The seed should be sown in drills 15 in. asunder, and 1½ in. deep; and it should be covered in by hand—a rake should not be employed for this purpose, as by its use half the seed is often drawn out of the drills, and the crop turns out a failure. Thin out the seedlings, as soon as they are large enough to handle, to 9 in. apart in the row, and if dark, bronzy-leaved kinds be grown, see that the greenest-looking plants are drawn out. After thinning has been completed, by means of the hoe frequently loosen the soil between the rows, an operation which will aid the growth of the Beet, and at the same time keep down weeds. If blanks, through failures, occur in the rows, they should be filled up with young plants in showery weather, though roots obtained in this way rarely prove satisfactory, being small and irregular in growth; still it is worth doing, if only for the sake of good appearance.

Varieties.

As a rule, the colour of the roots is the first consideration; but that, I think, is a mistake, as flavour should have precedence, rather than colour. Where both are combined, however, as is the case in Dell's Crimson, which has many synonyms, such a variety must be the best to grow; moreover, this variety has the additional attraction of deep crimson-coloured foliage, and is of no small importance as an ornamental plant. Other good varieties are—Henderson's Pine-apple, Dimmick's Nonpareil, Nutting's Dwarf Red, and Egyptian Turnip-rooted, the last being more especially suited for growth on shallow soils. Many other good sorts might be named, but these are the best, and they are sufficient for all practical purposes.

Lifting, Wintering, and Cooking.

Frost is most injurious to Beetroots, which should, therefore, be dug up by the end of October, or provision should be made for protecting them in the ground, in the event of severe weather setting in; this latter mode, though it entails the greatest amount of labour, is really the best way of preserving the full flavour of the root. Stable litter, hay-bands, or Bracken (Pteris aquilina) will effectually protect Beet, but, of course, where neatness is studied rather than utility, this manner of protection should not be thought of; in that case, the roots should be dug up at the time mentioned above, and "clamped" in the same way as Potatoes; or they may be layered in dry soil or sand, in a cool shed, but it must be really cool or they will start into growth, and the flavour will become deteriorated. When lifted, the tops should not be cut but screwed off, and the roots should not be injured more than can be helped, as such injury induces decay. Before cooking, the roots should be well washed, but not peeled or scraped, or in any way bruised, for, if such be the case, much of the saccharine matter escapes during the boiling, a process to which preference is generally given, and this mode of cooking doubtless renders Beet most agreeable to the generality of palates; though some prefer to bake it, by which mode a deeper colour of flesh is ensured, and a firmer texture, and where these are desired, or the roots much bruised, baking should be the plan adopted. W. Wildsmith.

Heckfield.

White Vegetable Soup.—To two Carrots, two Turnips, two Onions, three heads of Celery, three Potatoes, add half a pint of split Peas, boiled and rubbed through a sieve, or else the remains of Pea soup, if you have it; pass the vegetables through the sieve, add one quart of good white stock, and half a pint of cream or good milk, and season to taste.

PLATE XLIII.

THE CANNAS.

(WITH A COLOURED FIGURE OF C. IRIDIFLORA OF GARDENS).

By W. B. HEMSLEY.

It may be as well to state at once that the plant figured is not the true C. iridiflora, a description of which will be found below; but being probably a garden hybrid, it seems useless to give it a new name. Possibly it is a variety of C. gigantea, which Willdenow by mistake called C. iridiflora, and it is under this name it is mentioned below. From a botanical point of view we cannot have a C. iridiflora senior and junior, and therefore it becomes necessary to give the C. iridiflora of gardens a different name. Perhaps the name Giant Canna is not inappropriate, inasmuch as it is one of the most robust of the genus. The genus Canna was founded by Linnæus on two or three West Indian species; and in most of the old botanical works arranged on the Linnæan system, Canna appears on the first page. This is owing to the fact that the flowers are monandrous, or have only one stamen, a character common to very few genera; but there is another peculiarity in the flowers of Canna: the solitary stamen is like a petal with a one-celled anther on one of its edges. This petaloid stamen is one of a series of three, the other two being quite barren. The genus belongs to a small family, which includes the genera Maranta, Phrynium, and Calathea. In the closely allied Ginger family the solitary stamen bears a two-celled anther. No more need be said here respecting the kindred of Cannas, for they themselves form a distinguished family of highly ornamental plants, wholly independent of illustrious connections. Some of them were known in Europe, and objects of the fostering care of a few enthusiastic gardeners before botany was a science; in fact, some of the varieties of the West Indian C. indica were cultivated in Europe upwards of three centuries ago. The beauties of their foliage and flowers were highly appreciated even in those comparatively primitive days of gardening; and Parkinson, that admirable old gardener, describes their mode of growth, foliage, and structure of flowers in language that reads quaint now, but which for perspicuity is rarely equalled by modern writers on flowers. He writes so fondly, too, of his favourites, saying of the Cannas, we cultivate these with great care on account of their rare beauty. Philip Miller, a worthy successor to Parkinson, describes about half-a-dozen varieties in the first edition of his unrivalled "Gardener's Dictionary" under the name of Cannacorus, a name invented for them by Tournefort before Linnæus published his system of binominal nomenclature. In Aiton's "Hortus Kewensis," published towards the end of the last century, the following species are enumerated:—C. indica, coccinea, patens, lutea, and flaccida as being in cultivation. It is uncertain, from what Parkinson says about them, whether they were employed in out-door gardening in his time, but it is highly probable that they were, because they had little convenience for in-door culture; but since the taste for gardening became more universal, Continental gardeners anticipated their British colleagues in employing the numerous fine forms of this noble genus for embellishing the open garden. It is only about twenty years ago that the late Dr. Seemann recommended in the Bot. Mag. that Cannas, Musas, and similar plants should be tried for the summer decoration of gardens in this country as they had long successfully been in Germany. Now it is true a few varieties are planted in some of the parks and large private establishments, but there is no doubt, to use the stereotyped phrase, that they are by no means so commonly planted as their merits entitle them to. Since the adoption of what is unfortunately termed sub-tropical gardens—I say unfortunately, because it has given rise to many misconceptions, and is in some measure responsible for the neglect of many perfectly hardy plants equally as beautiful and imposing as the tender plants which have caused much disappointment—the claims of this unrivalled class of plants for various purposes have been gradually asserting themselves; but even at the present time few people seem to be aware of their hardiness and the ease with which they may be propagated. In almost any garden, except in the most exposed situations, they may be used with advantage, independently of their ornamental character. Their foliage bears the brunt of wind and rain better than most of the plants commonly employed for bedding, and when in flower they form one of the most striking features it is possible to create in the open air in our climate. It will be understood that they are only hardy in the sense that the roots will live through the winter if protected from frost, either by lifting and storing away or mulching with litter or leaves. The species and varieties available for massing or mixed planting are exceedingly numerous. In the first place, the wild forms described amount to nearly 100, whilst the garden hybrids and seminal varieties are practically innumerable. Foremost among the raisers of new varieties of Canna, M. Année, a French amateur, may be named. He commenced operations many years ago, and there are several varieties bearing his name, as C. Annei rosea, C. Annei floribunda, &c. These varieties, like other florists' flowers, are all superseded in their turn, and therefore it would be of little use to describe varieties in detail here, especially as the catalogues of the principal nurserymen contain selections. Descriptions of a selection of species or wild forms will probably be more useful. It will be seen that these alone present great variety in the size, shape, and colour of the leaves, as well as in the flowers. The principal acquisitions in garden varieties are those with brilliantly-coloured leaves and stems, and free-flowering varieties of the C. indica type. The latter have narrow, erect, or recurved petals of good substance, and the flowers are not so ephemeral as those with a broad, membranous lip, which are of very short duration. C. flaccida, a North American species, belongs to the latter group. A selection of a few of the most distinct species should include C. indica, Lamberti, lagunensis, gigantea, glauca, Warscewiczi, pedunculata, Reevesi, liliiflora, and iridiflora. Cannas are sometimes called Indian Reeds, and sometimes Indian Shot, from their round black seeds; but the generic name is simple and easily remembered, and therefore it is as well to discard both of the double names indicated.

Selection of Species.

Giant Canna (C. gigantea, C. iridiflora).—This highly ornamental Canna is generally known in gardens under the latter name, though the name belongs, according to the rule of priority, to a very distinct and magnificent species described elsewhere. Ruiz and Pavon's plant was described about twelve years before Willdenow published what appears to be the original of the variety here depicted under the same name; subsequently the name gigantea was adopted for it on account of its tall growth, reaching in its native country at least to 15 ft. Perhaps the plant figured here is a hybrid variety of garden origin, of which C. gigantea was one of the parents. At any rate, although it approaches the true C. gigantea in many respects, it is far superior as an ornamental plant, the petals being much broader, and of a deeper, richer colour; but whatever its parentage, and whatever the name it should bear, it is certainly one of the finest, if not the finest Canna in cultivation. As already observed, the true C. iridiflora is a really magnificent plant, but it produces its flowers so rarely in Europe, and the plant itself is so rare, that we may almost leave that out of the comparison. These two plants having been confounded, writers have described our plant as being a shy bloomer, and as requiring very special treatment and a tropical temperature to obtain success; but this is really not the case, the ordinary method pursued for Cannas generally being all that this variety demands. The name by which it is commonly known in gardens is the one by which it will probably continue to be known, and therefore it is of little consequence that it is perpetuated on the accompanying plate; nevertheless it is as well to point out the error, because the true plant is also in cultivation, and does not, like our plant, rejoice in a plurality of names. In Roscoe's "Scitamineæ" gigantea is figured under the name of latifolia, and it is also in some gardens under the name neglecta, or rather it should be said that Horaninow, in his monograph of the family, quotes these names as synonyms; but Roscoe's latifolia has leaves more like those of a small Musa, and is probably the same as the musæfolia of gardeners. However, the identification of the species and varieties of this genus is a task requiring a great deal of time. Perhaps some of the readers of THE GARDEN may know something more exact respecting the origin and parentage of the variety here figured.

Lily-flowered Canna (C. liliiflora "Flore des Serres," t. 1055-56).—The name of this fine species is very appropriate, which is much more than can be said of many specific appellations. The Lily-flowered Canna was discovered by Warscewicz in Central America,

and sent by him to M. Van Houtte, who published the plate quoted above in 1855. It does not appear to have become so widely dispersed in gardens as its ornamental merits deserve; indeed, I only know it from the plate in question. In Van Houtte's establishment it grew in a hothouse to the height of 6 ft. or 7 ft., the stems being clothed with ample green leaves, and terminating in spikes of large flowers with broad spreading petals. The flowers themselves are quite sessile, white, delicately tinged with yellow, green, and pink, and while in bud enveloped in large brown bracts. Judging from the plate and the description, this is a species that ought to find a place in every collection. In its large, open, white flowers it differs essentially from all the other species and varieties in cultivation. It is possible that this desirable plant was soon lost again, for M. Van Houtte says that, through the inattention of a gardener, he lost all the seedlings planted in the open air, except one. The seedlings made vigorous growth in a sheltered border, but perished in consequence of being left in the ground too late in the season.

Common Indian Shot (C. indica, Bot. Reg., t. 776).—This species, and many of the numerous varieties resulting from crosses between this and other species, may be reckoned among the most useful for grouping in the open air in summer. It is not, as might be imagined from the name, a native of India, but of the West Indian Islands and South America. Probably the first introduced into this country, it is also widely cultivated in tropical and sub-tropical countries, and has become naturalised in many parts of India and Africa. It varies considerably in the colour of the flowers, and C. pallida, speciosa, orientalis, and some others, do not appear to be specifically distinct from it; the differences being mainly in the size and colour of the flowers. What may be termed the typical variety has narrow petals almost uniform in size, the outer ones yellow, and the inner scarlet or crimson. But the improved garden varieties are gradually ousting the wild form from our gardens.

Esculent Canna (C. edulis, Bot. Reg., t. 775).—The origin of this species in our gardens is the same as that of C. iridiflora, having been raised from seeds sent to Mr. Lambert by Pavon, thirty years after they had been collected. It is a more robust-growing plant than C. indica, and has larger flowers. The petals are yellow and vermilion, and the short calyx-lobes pink. The leaves are shorter and broader than in the species named, of bluish-green bordered with red, and the stems of a deep blood-red. C. discolor ("Botanical Register," t. 1231) differs only in the leaves being of a purple colour on the under surface. C. coccinea differs only in having the broader segments notched instead of entire. The tubers of the Esculent Canna are consumed as food in considerable quantities in some parts of South America.

Lambert's Canna (C. Lamberti, Bot. Reg., t. 470).—A handsome species in the way of C. indica, but the flowers are rather larger, the petals broader, and all of a uniform crimson colour. It was imported by Mr. Lambert, of Boyton House, upwards of fifty years age, and is only known to me by the coloured figures of it in the periodicals. The compact habit of the plant, and rich colour of its flowers, combine to render it one of the most desirable for sub-tropical gardening. The tubers of this are eaten, and it is probable that several of the varieties indicated under C. edulis, as well as the present one, are of garden origin in America.

Buff-flowered Canna (C. mexicana; C. glauca, var. rufa, Bot. Mag., t. 2302).—This very distinct species has been in cultivation ever since the first year of the present century. There seems to have been some doubt respecting its origin, and it was formerly united with glauca; but Horaninow gives it the name adopted here, and states that it is a native of Mexico. It has narrow, lanceolate, glaucous, taper-pointed leaves, margined with yellow, and small sessile, orange-red and buff-coloured flowers.

Laced-flowered Canna (C. limbata, Bot. Reg., t. 771; C. aureo-vittata, Loddiges' Bot. Cab., t. 449).—A Brazilian species with yellow and scarlet flowers and narrow lanceolate leaves bordered with white, and terminating in a bristle point. The calyx lobes are also bordered with white, and the outer, shorter petals are wholly yellow; the inner ones are figured and sometimes bordered with yellow on a scarlet or crimson ground. This was first cultivated in this country in the Liverpool Botanic Garden about the year 1820. At that date the Liverpool Garden was rich in plants of this family, owing to the exertions of its founder, William Roscoe, the author of the splendidly illustrated work quoted here under several species.

Wood Canna (C. sylvestris, Roscoe's "Scitamineæ," t. 10).—A tall, slender plant with ample, lanceolate, taper-pointed leaves, and a few long flowers of a blood-red colour. It was in cultivation in the Liverpool Garden in 1813, but it seems to have been lost from cultivation, for there is no other figure of it in any of the numerous botanical periodicals.

Laguna Canna (C. lagunensis, Bot. Reg., t. 1311).—This has the close flowers of the C. indica group, but the petals are white on the outside, yellow within, and spotted with red. It is a very pretty species, with broad, abruptly-pointed leaves, and large spathaceous bracts. The lower leaves are about 9 in. long, and the upper nearly heart-shaped at the base. It was raised from seed received from Laguna, Mexico, in Mr. Lambert's garden at Boyton in 1829.

Mendoza Canna (C. Achiras, Bot. Reg., t. 1358).—In habit and foliage, and in the shape of the flowers, this closely resembles C. lagunensis; but the larger inner petals are crimson on the outside and buff within. A native of Mendoza, raised in Mr. Lambert's garden from seeds sent home by Dr. Gillies in 1829.

Warscewicz's Canna (C. Warscewiczi, Bot. Mag., t. 4854).—A comparatively small-flowered species; but the flowers are so numerous and so brilliantly coloured that it may be pronounced one of the best for ornamental purposes. It was introduced into German gardens by Warscewicz, in 1849, from Costa Rica, in Central America, and has long been one of the commonest in British gardens. It belongs to the group having the upper segment of the corolla more or less deeply divided, approaching C. discolor. The stem, and especially the peduncles and bracts, are of a deep red. The stout stem grows between 3 ft. and 4 ft. high, bearing ample ovate-oblong, taper-pointed leaves about 1 ft. long by 6 in. broad, quite glabrous, as are all the other parts of the plant, dark green, with a more or less intensely red midrib and margin. The flower-spike is about 6 in. long, and the young bracts and flower-buds have a remarkable bluish tinge.

Lady Hume's Canna (C. glauca, Smith's "Exotic Botany," t. 102).—This very distinct species was introduced early in the present century, and the plate quoted was prepared from a plant growing in Lady Hume's aquarium at Wormlebury, where (Sir Edward Smith states) this plant flowered copiously in the middle of the summer. In Aiton's "Hortus Kewensis," it is stated that this species was cultivated by Dr. James Sherard, at Eltham, in 1732; but the Cannacorus of Dillenius' "Hortus Elthamensis" is doubtless Canna flaccida, one of the two species with a very large lip; in fact, he says that his plant was raised from seed received from Carolina. The present species has also yellow flowers, but instead of having a large lip, the three upper segments are obovate or spathulate, and equal in size. The long, narrow leaves, as well as the bracts, are of a bluish-green colour, with diverging darker bands on the upper surface. It thrives best in water, in which it grows from 6 ft. to 8 ft. high. Native of tropical America.

Stalked Canna (C. pedunculata, Bot. Mag., t. 2323).—A tall, branching species, remarkable for its long, narrow leaves, and for the distant, separate flowers being seated on distinct stalks. The stalks vary in length from half-an-inch to three times that size; but they are always present. It was in cultivation in this country upwards of fifty years ago, and, being of a very distinct habit, would doubtless prove valuable to the hybridizer. The golden-yellow flowers are small for the genus, the outer segments being reflexed to the stalk, and the inner ones nearly uniform in size and shape. A native of Brazil.

Branching Canna (C. paniculata, "Flora Peruviana," t. 1).—This is a very distinct species, having a branched inflorescence, and small scarlet flowers. It has never been in cultivation in this country as far as I am aware, and may belong to a different genus. The leaves are described as being silvery, and woolly on the under surface. Pavon found it in woods and gardens in Peru, where the roots are eaten, but he describes them as being insipid.

Reeves' Canna (C. Reevesi, Bot. Reg., t. 2004).—This handsome yellow-flowered species was introduced by the gentleman in whose honour it is named, from China, about the year 1836. It flowered for the first time in this country in the gardens of the Royal Horticultural Society, in 1837. This and C. flaccida differ from all others in the lip, as it is termed, being very much larger than the other parts of the flower, and undivided. In this it is about 2 in. broad, and the whole flower is of a rich, deep yellow. It has oblong, acute leaves, dark green above, and somewhat glaucous on the under surface; one of the hardiest of the genus. It is sometimes separated, with the other species named, from Canna, under the name of Eurystylus.

Carolina Canna (C. flaccida, Roscoe's "Scitamineæ," t. 6).—This differs chiefly from C. Reevesi in its lanceolate, taper-pointed leaves, and larger, paler yellow flowers. It is a native of the miry swamps of the South-eastern States of North America, reaching as far north as South Carolina, and is perhaps the hardiest species of the genus. The habit is dwarf, the stout stems rarely attaining 4 ft. in height, flowers 3 in. to 4 in. long, lip about 2½ in. across. In con-

sequence of the extreme tenuity of the texture of the flowers of this and C. Reevesi, they are of very short duration.

Iris-flowered Canna (C. iridiflora (Ruiz and Pavon), Bot. Mag., t. 1968).—One of the showiest species of the genus; indeed, in the size of its flowers it exceeds all the other species. In the structure of its flowers this species differs materially from all the other species of Canna, the inner petals being united, forming a long, funnel-shaped corona, as Horaninow terms it. The botanist just named, in his monograph of the Cannaceæ, considers this difference of generic importance, and calls the plant Achirida iridiflora. The history of the introduction of this splendid plant into cultivation in this country is very singular. We are indebted for its first introduction at all events to that patron of horticulture, Aylmer Bourke Lambert, who, in 1816, received a large collection of seeds and fruits made by the celebrated traveller, Don José Pavon, in his wanderings in Peru and Chili some thirty years previously. Mr. Lambert determined, notwithstanding the long period that has elapsed since they were gathered, to try to raise such of them as he thought had retained the power of germination. He succeeded in raising several, among them the plant in question, and it flowered in his garden in 1817 for the first time in this country, and it was figured in the Bot. Mag. the following year. It is a tall-growing plant, attaining as much as from 6 ft. to 10 ft. in height under favourable conditions. The leaves are from 12 in. to 15 in. long, and 6 in. to 9 in. broad. The flowers are few in number, but very large, pendent, nearly 6 in. long, and of a beautiful rosy red, tinged and streaked with yellow on the tube, where the ground colour gradually tones down to a pink. This strikingly handsome species has been several times reintroduced from the gardens of Peru, but being a shy bloomer it is probably often neglected, and thus perishes. It is now exceedingly rare in Europe, and several inquiries after it have appeared in gardening periodicals, both in this country and on the Continent. It is apparently unknown in a wild state, though commonly grown in gardens in Peru.

MY DIARY FOR SEVEN YEARS.

By W. DENNING.

October 23.—*Potting*—Tropæolum Jarratti, Charles X. Lilac, and Kalmia latifolia; also Liliam lancifolium, album, and rubrum in peat and sand; late Stocks for winter flowering, and Echeverias from borders. *Planting*—Bulbs in flower-beds; 200 Brier Stocks for budding, and Box for edgings. *Miscellaneous*—Removing all Centaureas from flower garden and plunging them in a cold frame; taking up Dahlias, the tops of which are all killed; taking up Endive and putting it where it can be protected; shifting double Wallflowers into 32-sized pots; putting Lobelias into a warm pit for cuttings; placing Roses in pots under cover; tying up Bath Cos Lettuce and some Endive to blanch; nailing Currants and Gooseberries on walls; putting Chrysanthemums into conservatory and all Strawberries in pots under cover; clearing Orchids of thrips; washing Stephanotis; watering Peach trees in early house; gathering all Scarlet Runners which are fit for use; taking up Carrots and Beetroot; pruning early Peach trees indoors, also Roses for forcing; thinning some of the inside shoots from Nut trees; hoeing among young Strawberry plants; cleaning Asparagus beds; cleaning first Vinery and making it ready for starting; beginning to keep Lycaste-house drier, not sprinkling the ashes so much, only the floor twice a day; Lady Downes Grapes cracking a little; thatching border and maintaining a little more fire-heat for a few days, but not exceeding 55° at night; keeping Pelargonium-house at 50° at night by fire-heat for winter flower; taking down Orchid-house shades.

Oct. 24.—*Sowing*—Nemophila and Saponaria in pots. *Planting*—Wellingtonias in the park; also standard Roses, Hollies, Wallflowers, Silene, and Tulips; likewise double-bearing Raspberries from pots, and Lettuces, the latter under the protection of a hedge from between second crop of Celery, in order that the latter might be earthed up. *Miscellaneous*—Washing Orange trees; sending in first dish of autumn Bergamot Pears; burning rubbish; sweeping centres of walks to keep leaves from being trodden in the gravel; washing woodwork in a pit which is being prepared for Gardenias; French Beans sown in September in full flower, those sown in October just coming up; Anne Boleyn Pinks in flower.

Oct. 25.—*Potting*—Variegated Dactylis for flower-beds; putting a few more Primulas into 8-in. pots. *Miscellaneous*—Taking off Chrysanthemum layers; putting some Pears in a warm place to ripen; getting all Strawberry plants, Pinks, and Carnations stacked; taking up Lettuces and putting them under protectors in front of south wall; washing a Fig tree infested with scale with soft soap; sent in the last Plums; also the last dish of Peas; top-dressing first Peach-house outside border with ½ in. of bones, short manure, and loam; preparing frame for Lettuce; trimming up conservatory creepers; washing woodwork, &c., in first Vinery, and otherwise making it ready for starting; raising temperature in French Bean house to 62° at night and 65° by day fire-heat.

Oct. 26.—*Potting*—Forget-me-Nots for flowering in pots. *Planting*—Feverfew; also Aubrietias, Arabis, Alyssum, and Pansies in beds. *Miscellaneous*—Examining the roots of Cherry trees, and give them some new soil; getting all Pelargoniums from frames, &c., into house; placing old roots of Salvia patens in boxes, and putting them under stage in back pit for cutting in spring; sending in Raspberries, also Marie Louise Pears, and gathering Josephine de Malines and Glou Morceau; top-dressing second Peach-house border, with half-a-bag of bones, short manure, and loam; earthing-up July-sown Cabbage.

Oct. 27.—*Potting*—Layered Carnations; also Lily of the Valley for forcing. *Miscellaneous*—Putting long straw over Laburnums in pots for forcing, and plunging Rhododendrons for the same purpose in straw; taking up Bath Cos Lettuces and putting them under protection; protecting Cauliflower heads by tying the leaves over them; tying Peach trees in first Peach-house; beginning to nail Morello Cherries; putting straw round Violet frames; top-dressing early Vines with good loam, bones, sand, and horse-droppings; turning manure for Seakale forcing; gathering Easter Beurré Pears.

Oct. 28.—*Planting*—Nemophila, Limnanthes, and Silene in flower-beds. *Miscellaneous*—Putting Dendrobium infundibulum and D. Jamesianum in cool-house to be kept wet, so as to make Moss grow; manuring Roses; earthing up Celery for the last time when the weather is dry; giving Calceolaria cuttings a little air, and only shading them for about an hour at noon.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Large-flowered and Fancy Pelargoniums. — These, although more difficult to grow well than the Zonals so much in favour of late years, are much more varied and beautiful in their colours and general habit of growth than the unlimited numbers of new scarlet and pink Zonals that yearly make their appearance, many of which scarcely possess a shade of variation in colour from others that have preceded them. The great difference in the treatment required by the Fancy and Large-flowered kinds from the Zonals is, that through their growth being so much slower than that of the latter they do not require, nor will they bear, the same quantity of water at the roots, especially during the autumn and winter months as the others; and many amateurs, whose practice has been confined to the cultivation of the Zonal Pelargoniums have at first found a difficulty in managing the other varieties all through the autumn and winter. After the usual potting about the end of August, particularly in the case of plants that have been cut back freely, and a considerable portion of the roots removed, these will not have really filled the new soil with roots, and must be watered very sparingly for the next four months. It is not an easy matter to describe the necessary quantity of water required by any particular family of plants grown in pots, but in the case of these Pelargoniums a safe course to follow is not to give any water so long as moisture can be detected in the soil by pressing the surface with the fingers, as from the hard potting they require the pots will very often not respond to the usual test of rapping. If ever the soil in which these plants are grown become too wet at this season the roots will most likely perish. To strengthen them still further, they should be elevated as near the roof of the house or pit as possible, and be kept tied out so that every leaf shall receive its due proportion of light.

Chrysanthemums in most places are late, which is an advantage so far as keeping up a supply of flowers until the end of the year is concerned, but to secure this they need some additional care in their treatment. Those that are the latest in forming their bloom-buds are much better out in the open air, so long as they can be protected from frost; to secure this protection a slight temporary framework of wood should be fixed up to the south side of a wall or building and be covered overhead with canvas, or any light material that can be removed during the day. An old blind that has been used for shading a plant-house or Peach-wall will in most cases be quite sufficient to afford the necessary protection for some weeks to come. The advantage gained by placing the latest flowering of the stock in such a position is twofold: it prevents the houses getting overcrowded; and the plants thus out in the open air do not become drawn and a prey to mildew, a condition to which they are very subject when placed under glass for a considerable time before the blooms increase in size. The flowers should be thinned out as

soon as they are large enough to lay hold of, reducing their number according to the size of the pots and the description of the plants. The largest-flowered kinds should be more severely thinned than the medium-sized sorts, and these again more than the Pompones. The whole ought to have their buds reduced to about one-eighth of their number, and the plants must be regularly supplied with manure-water of a stronger description than that used for other plants in pots; on no account should they be allowed to flag for want of moisture, or the bottom leaves, as well as the flowers, will be sure to give evidence of such neglect. The unremitting attention thus recommended for subjects so easy of cultivation as Chrysanthemums, may appear to some to be more than necessary, but only by such treatment can these beautiful autumn and winter flowers be grown in the way they so well merit. There is one great benefit derivable from thinning the flowers not generally noticed, and that is where this is well and judiciously carried out not only are the blooms much finer, but individually they retain their freshness considerably longer, on account of the greater substance in the petals resultant from all the strength of the plants being concentrated in maturing a limited number of flowers. Should any mildew make its appearance, dust the affected leaves with flowers of sulphur immediately; delay in this respect will be certain destruction to the foliage before the blooming is over.

Miscellaneous Plants that are yet out-of-doors, and at all liable to be injured by frost, ought to be at once placed in the houses, pits, or under some temporary shelter; such are Dracæna australis, Agaves, Phormium tenax (both the green and variegated forms), Aralia Sieboldi, and A. Sieboldi variegata. Amateurs with gardens, either large or small, who have the convenience of only a single greenhouse, will do well to grow plants of the above description, on account of their thorough adaptability to serve a double purpose. In the winter, when placed in a greenhouse or conservatory amongst the usual kinds of flowering plants, they contribute much to the general effect by their dissimilarity in appearance; and in the summer, out-of doors, with their pots plunged amongst the bedding plants in the flower garden or in vases, they do much to relieve the want of diversity in form and superfluity of colour. With such subjects as the above an ordinary plant house can from time to time be changed in general aspect by altering the position the plants have occupied in it, so as to remove the sameness resulting from seeing certain plants always in the same places. They also possess other advantages: they are easily grown; are less liable to suffer from neglect than many plants; and they are but slightly troubled with insects.

Carnations in Pots for flowering during the winter should not be exposed to frost or excessive wet. I frequently find there is an impression that such plants as these, and others of a similar character that are hardy, will, when cultivated in pots, bear without injury the extremes of wet and cold, as if they were in the open ground, but such is by no means the case; when the roots of any plant are confined in a pot, even when thoroughly drained, and the soil of an open porous description, they will perish if exposed during very wet weather, while they would receive no injury if planted out in the open ground. They should now be placed in a good light pit or frame until they can receive the necessary heat to induce the flowers to open; this must be regulated by the time they are required and the means at command. To do justice to these valuable sweet-scented flowers, when being brought into bloom they should occupy a place with their tops within a few inches of the roof glass, where they will obtain plenty of light, and a temperature of about 50° during the night, with a rise of 10° in the day, and if possible a little air night and day, otherwise the plants become drawn and spindly, in which state they will not afford the full succession of bloom that they will give if their treatment be such as will keep them stout and bushy.

Calceolaria Cuttings.—In dry, sandy, or gravelly soil Calceolarias, especially the yellow varieties, have of late years been difficult to manage from their liability to die off during the summer after planting out; this, despite the nature of the soil, will occur if the plants get into a stunted hard state before being planted; the best means of preventing which is not to strike the cuttings too early, if put in at the time during the autumn recommended for other plants they become too large before winter, which has a tendency to induce the condition above described. It is yet time enough to put them in. They should not have any heat applied to them. A cold frame from which, by the use of litter and mats, frost can be excluded answers the best, placing 4 in. of fine sandy soil in the bottom. The cuttings should consist of about three joints of the soft tops of the shoots. Insert these 3 in. apart, immediately give them a good watering, and never allow them to get dry from the time the cuttings are put in to the day when the plants have to be removed from the beds in which they have flowered the ensuing autumn. Put on the lights, keeping them closer than for most other subjects, only giving a little air on fine days.

Greenhouse Plants.

Where due provision has been made during the summer months by working up a good stock of soft-wooded subjects, such as Chrysanthemums, Heliotropes, Salvias, Cinerarias, Primulas, Solanums, Perpetual Carnations, Mignonette, Eupatoriums, &c., there will be no lack of free-blooming plants to render the greenhouse or conservatory attractive for several months to come. In order to get these in succession and prolong their season as much as possible, it will now be necessary to forward those that will bear a little heat, and keep back others by placing them in cool, airy positions, thus retarding their flowering to a later period. Few plants are more accommodating in their nature, or will stand either kind of treatment better than the old Richardia æthiopica, which, if properly prepared by being grown in the open ground, may be made to afford a constant supply of its lovely pure white flowers from now till May or June, at which time they have to be separated for planting to be again ready for the following winter. Richardias will bear quite as much heat as any stove plant, and appear to enjoy it, but when subjected to it stronger than is requisite to get them early in bloom, they are apt to become drawn both in leaf and flower-stem, which not only spoils their appearance, but renders them incapable of bearing the low temperature of the conservatory or greenhouse. In cases, however, where they are only wanted for cutting, this drawn appearance is but of little consequence, as it does not materially affect the quantity of bloom they yield nor the time they last in water when cut, although most other plants would at once show the effects of such a style of growth. Their exception in this respect is not much to be wondered at when we consider the great substance of the flower and how readily water is conducted to it by the large sappy stem on which it is supported. Where large quantities of cut bloom are required, and room for producing it is scarce, as is the case in most places, there need be no hesitation in arranging plants of the Richardia a long way from the glass, and in positions that would be of little use for other purposes.

Solanums of the berry-bearing class are unusually late this season, owing to the cold winds that prevailed for some time after planting them out. As most of these ought now to be sufficiently established in pots after being taken up from the ground, a portion of the stock may at once be placed in heat to hasten the colouring of the berries. To do this they should have a light, airy position assigned to them near the glass, where they can receive the full benefit of what sun is obtainable at this dull season. In order to prevent their leaves from shedding, they should be well supplied with water at the roots; and if the atmosphere of the house in which they are placed be at all dry, syringe copiously overhead at least once a day. It generally occurs that Solanums when planted out make such strong growth, and become so thick with branches, that their beautiful bright berries cannot be shown off to the best advantage; and where this is the case, the appearance of the plants may be much improved by thinning out a few of the weakest, misplaced shoots that have not a good crop on them, but this should not be done in such a way as to give them a pruned, stumpy appearance.

Salvia splendens, one of the most useful and showy of all autumnal flowering greenhouse plants, is now in great beauty, and will remain so for some time to come if well cared for and kept from damping, to which it is very subject, unless fully exposed to the light and kept in a house moderately warm with a free circulation of air. If confined to small pots, they should now have plenty of manure-water to enable them to push forth bloom on the lateral branches, which they will continue to do when so assisted till Christmas or even later, when the variety known as S. Heeri will be coming in to take their places. These will be growing fast for the next month or so, and should have a light position afforded them with plenty of room between the plants, or they soon become drawn and bare below, which greatly detracts from their appearance. To keep their leaves of a healthy green colour, they should be freely supplied with liquid manure, as the pots they now occupy will be very full of roots.

Cinerarias.—The earliest batch of these should at once be shifted into their flowering pots, using for the purpose a light, rich soil, consisting principally of leaf-mould, loam, and well-decomposed cow-manure, in which they will luxuriate and produce fine heads of bloom. They delight in a moist atmosphere, and no place suits them better at this season than a light pit where they can be arranged on inverted pots, or a good solid floor of coal ashes, of sufficient depth to be impervious to worms. On stages, shelves, or in houses, they dry too quickly at the root, and never get sufficient moisture in the air to keep the lower leaves in health. Should green fly or mildew

attack them, the usual remedies of sulphur, and fumigation with Tobacco must be resorted to; but the latter must be used with great care or the plants will suffer injury, so impatient are they of an overdose of smoke. Young growing plants will be benefited by being well syringed on the afternoons of fine dry days, at the same time shutting up the house early to encourage them to make progress before bad weather sets in. Calceolarias of the herbaceous kind require similar treatment to that necessary for Cinerarias, and the same atmospheric conditions, situation, &c., will be found to suit them exactly.

Primulas, on the other hand, soon suffer at this season, unless they can be placed in light, airy positions, as afforded by a shelf, where they can remain with their foliage well up to the glass, in which position they will be found to grow sturdy and strong without that tendency to rot off at the collar, to which they are so liable when standing in pits or other situations where the atmosphere is either close or damp. In watering avoid wetting the hearts of the plants, as when that becomes of frequent occurrence, they are almost sure to go off, however suitable the position in which they are placed may be in every other respect. Those intended for early display ought now to be in their flowering-pots and these well filled with roots, in which case weak liquid manure will be of great assistance to them in pushing up their blooms and developing the same as well as adding materially to the brilliancy of the colour. The double kinds, on account of their slower growth and delicate nature, require more warmth than the single varieties, but with that exception, the treatment at the present time should be in all other respects identical.

Pelargoniums of the show varieties that were placed in pits or frames after having been shaken out and potted should at once be removed to light and airy houses, and be placed on shelves or other positions as near the glass as possible, in order to keep the growth short-jointed and stocky, and prevent them from becoming disfigured by "spot," a malady to which they are particularly liable if they remain long in damp or unsuitable situations. As they have not made much leaf at present, water must be given but sparingly till the turn of the year, or they will not root with the freedom requisite for the production of fine plants, or make such strong growth as when the soil is rather on the dry side.

Hyacinths, Tulips, Narcissi, and other bulbous plants should be potted at intervals and in sufficient quantities to meet expected requirements. These never look so well in any other way as when potted three in a pot and placed triangularly as close to the sides as possible. Pots 6 in. or 7 in. in diameter are quite large enough for the purpose, as what the roots lack in room can be made up in richness of soil and plenty of strong liquid manure whenever they require water. Their effect is so much superior when grown in this way to what it is when seen singly, that any one who once adopts this plan will never return to that of single growth; they have the best effect when all of one variety are grown in the same pot; or they may be arranged for two dark and one white, or *vice versa*, according to taste. A sound fibry loam suits them best, to which add about a sixth of well-decomposed dry cow-manure, and just sufficient sand to keep the compost open and porous. If the soil at the time of potting be moderately moist, they will not require water, but if otherwise, they should receive some through a rosed watering pot and then be allowed to drain for twenty-four hours or so before covering them up with ashes, tan, Cocoa-nut fibre, or any similar material that may be used for the purpose. Choose a hard, dry bottom on which to place them, and keep off any rainfall by protecting them with shutters or old spare lights. Those potted early in September will require watching to get them removed from under the plunging material before they make much top growth, or the tops of the young tender leaves get disfigured. For very early forcing the small Roman Hyacinths are the most suitable, a few of which should be placed in heat at short intervals to secure a regular succession.

Lily of the Valley, always a favourite—and especially so when it can be got in early—may now be started, but in order to be successful the roots must be strong and well established, and the forcing slow at the outset, or they will push up nothing but leaves. For the present a pit or frame where they can receive a gentle bottom-heat, and be kept cool at the top, will be the best place for them till they begin to move, after which they may be urged on a little faster.—J. Sheppard, *Woolverstone Park.*

Orchids.

Most of the Pleiones produce their lovely flowers in autumn; they should therefore be looked after in order to detect the first signs of new growth with which the flowers are associated; but, if water be given too freely at first, the leaves get so much ahead as to destroy the flowers; they should therefore be but sparingly watered until the flower-buds are distinctly visible, when a more liberal supply may be given; a slight increase of temperature is also conducive to the development and proper colouring of the flowers. Many imagine that Pleiones are difficult to manage, but if a regular system of treatment be adopted, that is not the case. They should be kept both during the growing and resting season in an elevated position in a group by themselves, either on a shelf or on inverted flower-pots, in order to bring them as near the light as possible, for when mixed with the larger growing plants, they invariably fail sooner or later. If care be taken that moisture does not settle on the flower they will be found to last long in perfection. The proper time for potting these plants is just after they have done flowering, when they should be turned out of their pots, the soil removed from the roots, the pseudo-bulbs divided (*i.e.*, each pseudo-bulb making new growth, and having a decaying pseudo-bulb behind it should be parted from the others), and potted, three or more, in a pot in equal proportions of turfy loam, fibry peat, and silver sand; the older pseudo-bulbs, which die away annually, should never be cut off, for if left they assist in the formation of new ones. Although Pleiones will bear even the heat of the East India house while growing, provided it be well ventilated, they make sounder growth when treated all the year round as intermediate-house plants. Deciduous terrestrial Orchids—such as Bletias, &c., which lose their leaves when at rest, leaving little of the plants visible—too often fall victims to the same ill-treatment, by which many beautiful bulbous plants are destroyed; the flowering being over, growth finished, and the leaves gone, the plants, being no longer useful for decorative purposes, are stowed away under the stage in some out-of-the-way place, there to remain until they again begin to grow; these plants will bear a great deal of ill-treatment, but there is a limit even to their powers of endurance, and when so treated they are frequently lost; they require pure air as much while resting as when growing; therefore, when at rest they should be placed in an elevated position on a shelf, where they can be carefully tended, rather than under a stage out of sight. It is not an uncommon thing to see terrestrial Orchids and delicate bulbs put away to rest under stages where they receive direct heat from the hot-water pipes and the drip from the plants above them—treatment which forces them into weak spindly growth, during the period they should be resting, and yet such plants are expected to flower at their proper season, while at the same time they have enough to do to exist.—James O'Brien.

Roses.

Pot Roses should now be placed under glass, or in some open sheds (if glazed all the better), and if the protection of a shed cannot be afforded them, the Hybrid Perpetuals should be plunged in some old tan or Cocoa-nut fibre, or in ashes, so as to protect their roots from frost. Tea varieties can be stowed away in cold pits or frames that are not in use, or better still, in cold houses. In removing Roses to their winter quarters, select some of the best of the late-flowering kinds, and place them in a cool, airy house. Water them sparingly; remove all buds and leaves that are damping off; dust with sulphur should mildew show itself; and by careful treatment in this way a supply of cut flowers may be had up to Christmas. I have found good plants of such sorts as Gloire de Dijon, Madame Falcot, Madame de St. Joseph, Sofrano, Goubault, Rubens, and Souvenir de la Malmaison, invaluable for flowering in autumn and winter. These, under ordinary treatment, produce plenty of wood as well as flowers. Maréchal Niel should occupy a house in which there is some artificial heat in winter to encourage growth and induce the buds to expand. I have always been successful in forcing this variety, which I start in November, subjecting it to about the same treatment as that usually given to an early Vinery, till the buds show themselves, after which syringing must be discontinued, as water is apt to blacken and spoil the flowers. Under skilful treatment Maréchal Niel will produce plenty of fine flowers at Christmas, and all through the months of January and February. I would recommend every one to grow a few standard Roses for winter work, and, where they cannot be got from a nursery, this is a good time to lift such plants and pot them.—H. G.

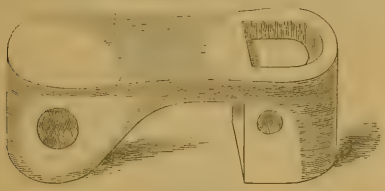
Hardy Fruits.

On account of the showery weather, fruit gathering has this season been a troublesome operation, as it has been difficult to obtain the fruit in a sufficiently dry state for housing; extra pains will, therefore, be necessary in the airing of the fruit-room, at least till all superfluous moisture has passed off, and the fruit has become thoroughly inured to the temperature of the room. In close, damp weather, such as we are at present experiencing, the fruit-room should be kept quite closed, except for a couple of hours in the middle of the day; but, whenever the atmosphere is clear and of a drying nature, all the ventilators should be wide open, of course

closing them at night. The thinner the fruit is arranged on the shelves the better and longer it will preserve its proper condition and flavour. Any special kinds of Apples or Pears that it is desired to keep for as long a period as possible should, when dry, be wrapped up (each fruit separately) in tissue-paper and placed in air-tight drawers; in this manner they will last for a very long period, that is to say, if the natural constitution of the fruit possessed keeping qualities; for it is useless to attempt to keep early ripening kinds after this fashion. Continue to gather late kinds of Apples and Pears as they are ready and weather permits, and examine the stock previously gathered, from which remove all with any signs of decay. As a guide to intending planters (the season for which is at hand), the following early kinds of Pears have this season been of extra good quality, and may be depended upon as prolific fruit bearers in a general way:—Belle de Bruxelles, Williams' Bon Chrétien, Beurré de l'Assomption, Poire Pêche, Beurré Hardy, Seckle, and at the present time Marie Louise, and Flemish Beauty. Should the weather be favourable, the present is the best time for planting fruit trees of nearly all kinds, though if the ground be saturated with wet, it had better be deferred, as planting at a wrong time, or in a soil thoroughly unfit causes the unsatisfactory growth of most fruit trees. Strawberries that have been denuded of runners should now be slightly pointed over, not deeply dug, and then receive a top-dressing of well-decayed manure, which will not only serve as a fertilizer, but as a protection to the crowns during winter. Keep the runners pinched off newly-planted plots, and if they can be mulched in a similar manner, the Strawberry plants will derive great benefit from such treatment.—W. Wildsmith, *Heckfield.*

GARDEN CLOGS.

Mr. Moffett, an American Vine grower, finding that pruning his vineyard when the ground was covered with wet snow or a slight



A Garden Clog.

covering of mud over frozen ground was conducive to cold feet and consequent discomforts, devised a pair of clogs to overcome the difficulty. The device is shown in the engraving, and consists of blocks of the shape here given, made of any light wood; an excavation is made for the heel of the boot, and two holes are bored for straps, by means of which it can be fastened at the heel and toe. They are made high enough to keep the feet well up out of the snow or mud. The inventor, instead of running to the Patent Office with his contrivance, gives it for the benefit of his brother horticulturists. One cannot always wait until the surface is in a condition to allow the pruning to be done with comfort, and we have no doubt that this clog will much facilitate operations. Wooden shoes are not to be had everywhere, but any one can make a clog of this kind.—"American Agriculturist."

Cooking Jerusalem Artichokes.—Wash the Artichokes, pare them, boil for twenty minutes until they are quite tender; drain them, and pour good melted butter or white sauce over them. —Boil them for about twelve minutes; lift them out, drain them carefully, and let them cool; dip them into beaten egg, and cover them with fine bread crumbs; fry them a light brown, and serve them directly.

Jerusalem Artichoke Soup.—Boil 3 lbs. of Artichokes in water for ten minutes, lift them out, and slice them into three pints of boiling stock, which has been well flavoured with Onions, Carrots, Herbs, &c. Let them stew for twenty minutes, press them with the soup through a fine sieve, and put the whole into a clean saucepan, with a pint-and-a-half more stock; season this with salt, cayenne, a little mace, and a lump of sugar. Let it simmer two or three minutes, and stir to it a pint of rich cream. Milk may be used instead of this last, but 2 or 3 ozs. of butter must then be added.

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TREATISE ON THE GRAPE VINE.*

This, the latest contribution to Vine culture under glass, contains the experience of one of the best Grape growers in England, who has obtained first prizes for Grapes, not only in this country, but on the Continent, for years. The treatment which so distinguished a cultivator recommends, may therefore be safely followed. His book consists of ninety-six well-printed quarto pages, in which the different phases of culture are tersely given in the form of little essays, three of which we reproduce.

Proper Time for Planting.

Various opinions are entertained as to the best time for planting Vines. I have planted in every month of the year; in fact, I may say I have planted all the year round. I prefer planting good strong Vines in a growing state, after they have been properly prepared for the purpose. If the gardener or amateur have not the convenience to prepare the Vines he wishes to plant, it is better and cheaper to procure them from a respectable nurseryman. It does not always happen to be convenient to plant the Vines in a growing state, but if not, they can be planted whilst in a dormant condition with great success. I do not advise any one to plant stunted or tardily-grown Vines. Where it is convenient, I would always recommend that plants should be selected from a well-growing and clean stock—I mean, they should be in a free-growing condition. Of course they should be marked, and the nurserymen extra paid for allowing this to be done. It is money wisely spent. When I am building a Vinery, I endeavour to arrange to have the rafters about 4 ft. 6 in. to 5 ft. from centre to centre. This gives plenty of room for two Vines, one under the rafter, and one under the middle of the sash. I think it much better to take a moderate crop off two Vines than to crop one too heavily; by these means a fine crop of Grapes can be produced without each Vine being overloaded. Some cultivators will contend that it is not necessary to plant so thickly, acting on the principle that, if you have two canes from one plant, the roots will be in proportion to the quantity of wood and leaves produced, and that the quantity of fruit may be taken off in the same proportion. This may be partially true. Still, I have not succeeded by such means so well as when I planted two Vines where many only plant one. In the case of the Muscat of Alexandria, only one Vine should be planted to each rafter, as these Grapes require all the light they can get to colour them.

Growth and Management after Planting.

After the Vines are planted, they must be grown in a very careful manner. They should be allowed to start in the spring of their own accord, simply protecting the young buds and shoots from frosts for three or four years. I am assuming that the house is required for early (but not very early) forcing, in order that the Grapes may be ripened about the first, second, or third week in May, depending on the sun and weather. The fourth year, they may be started about the last week in December, or the first week in January; the fifth year, the last week in November, or the first week in December, and they may be expected to be ripe some time in May. For the earliest and latest crops, I recommend all who have the convenience to force them in pots, and from Vines planted out in pits. By so doing, the gardener or amateur is enabled to keep the permanent Vineries in splendid condition as to health, &c. The Vine at five years old may be allowed to carry a full crop, that is, if proper attention have been paid to its growth. It may have on from ten to fifteen bunches, according to their size and the length of the rod. It is best to estimate, as nearly as possible, by the weight of the bunches. A succession Vinery may be prepared in the same way to come in a month or six weeks later, depending on the demands made on the cultivator; and so on with any other Vinery the gardener may have under his charge. This he can arrange according to the requirements of his employer, the extent of the establishment, &c.

Temperature, Pruning, and Dressing.

The Vines should be pruned as soon as the wood is thoroughly ripened and the leaves fall off. Before falling, the latter should have a beautiful yellow tint. After this is attained those which do not fall off naturally may be removed by the hand, and the Vine pruned back to one or two eyes. I prefer leaving one eye instead of two, as it keeps the fruit near the main stem, and consequently close to the nourishment or food of the plant, which ascends up the main channels. After pruning, I prepare the following dressing:—1 lb.

* "Treatise on the Grape Vine." By Joseph Meredith. London: George Philip & Son, 32, Fleet Street.

of the best powdered sulphur, 1 lump of lime weighing about 2 lbs., 2 quarts of good Tobacco-water, to which clay and water are added until it is of the consistency of paint. I then make a paint-brush by tying bits of mats together, as I find this softer than an ordinary painter's brush, and not liable to injure the buds, and I coat the plant all over with the mixture. The bark ought not to be peeled off the Vine, as is too often done by gardeners and amateurs, because it weakens the constitution of the plant, besides looking, as well as being, an unnatural practice. My opinion is, that when the bark is removed, the sun overheats the sap, as it rises in the stem, and has a tendency to bring on shanking, red berries, &c. If the removal of the bark be really necessary, for the purpose of getting rid of bugs, thrips, red spider, &c., I recommend the cultivator to tie Moss on the stems of the Vine, which, in a great measure, is a good substitute for bark. As already indicated, plants should not be introduced amongst Vines where it can possibly be avoided, as I know well from experience that no one can keep Vines in a healthy condition where this is practised. Where there are the means of giving the Vines bottom-heat, it may be used a fortnight before the heat is turned on the top, assuming that the surface of the border is forked up, and all ready for watering (which I ought to have mentioned should be done before the heating is commenced). The water should be of the temperature of 65° to 70° for two or three weeks; then, beginning with the temperature of the top-heat at 50° at nine o'clock at night, it must not be lower, if it can be avoided, than 48° at five o'clock the next morning. From this time it should rise gradually until it reaches about 60° to 65°, and a little air admitted as the temperature increases. If it be a dull day, it may remain at this until night is drawing near. Air must be taken off as gradually as it has been put on; and if it be not stormy, a little may be left on all night. If the day be sunny, the temperature may rise to 75°, with air on, of course. Care should be taken that when air is given it is done by degrees, and taken off or reduced in the same way. I know it is very irksome to some young men to have to jump up from their meals every time a gleam of sunshine appears, but it is necessary if perfection be their aim, and also to watch all night when the weather is boisterous and frostily inclined. After about a fortnight of the above treatment with regard to temperature, both top and bottom heat may be raised a few degrees, paying strict attention to the air as recommended above. After another fortnight, the temperature may be raised to 60° at nine o'clock at night, and ought not to be allowed to fall lower than 57° to 58° at five o'clock the following morning. By this time the Vines will require disbudding, which should be done carefully, and the buds left about 18 in. apart. When coming into flower, the temperature should be raised to 65° at nine o'clock at night, and to about 63° or 65° at five o'clock next morning; on dull days the atmosphere may rise to 72° or 75° with air, and if sunny, to 85° or 90° with plenty of air. Muscats may be treated in the same way, but must have 3° or 4° more heat, both night and day. Thinning may be done, as advised in another part of this treatise.

These extracts will show the kind of matter of which the book consists, and we may add that it is well "got up," and illustrated both by coloured sections of Vineries and woodcuts.

MORÆA (IRIS) FIMBRIATA.

This is a very remarkable plant, which well deserves to be much more generally cultivated than it is. Brought from China to England about the beginning of the present century, it found its way to Paris, and was figured in that magnificent work, "Le Jardin de Cels," in the eighth year of the Republic; also in Curtis's "Botanical Magazine" under the name of Iris chinensis. It was likewise called Evansia chinensis, in compliment to Mr. Evans, who introduced it: it then went out of fashion. It is found for the last time in Lee's catalogue, in 1830, and we look for it in vain in the French, Belgian, German, and English catalogues of our time. Notwithstanding this neglect, it well deserves the attention of amateurs for its beauty and elegance. It differs from other Irises in having fringed petals, and might well rival many of our Orchids in the brilliancy of its colours (pale blue striped with bright yellow), its lovely trusses of bloom, delicate odour, and the long period of time during which it is in flower. It succeeds best when grown in rather small pots; when the spring frosts are over these must be plunged into the ground in a warm situation; they will require plenty of water. About the end of October they should be taken up and placed in a greenhouse, or even in a cold frame, care having been taken to pot off the young shoots. Thus treated, the Moræa will bloom for months. Peat mould suits it best, but it will flower and thrive in almost any kind of soil. M.

GARDEN RECEIPTS.

Red Spider.

If the size of this insect were proportionate to the damage it does to plant-life, it would be much more formidable in appearance than it is, but, being exceedingly small, it frequently escapes detection until the plants upon which it makes its appearance have sustained serious injury. Great numbers of cultivated plants, especially those grown under glass, suffer from its ravages; but such as have thin, soft leaves, like Vines, Cucumbers, and Melons, are more subject to it than others. The living insects cannot exist in a low temperature, but their eggs are proof against the lowest temperature of our severest winters. The Red Spider has a great aversion to moisture in the atmosphere, and still more to its application directly overhead by the use of the syringe or garden engine, a fact which at once indicates the means most likely to prevent its appearance where water can be used plentifully without injury, in other respects, to the general health of the plants. In the stove the fruit-bearing Banana and the acrid-juiced Croton or Euphorbia also furnish food for it. Dipladenias, Hibiscus, Ixoras, Francisceas, Amarantus, Palms, Ferns, Dracænas, together with quantities of other plants, are affected by it. Through the growing season a plentiful and continuous application of water overhead with the syringe is necessary, and it frequently happens that this is insufficient to keep it down unless used in quantities that will make the soil too wet, and consequently injurious to the roots of the plants. In the stove do not sulphur the pipes, as there generally are numbers of plants that suffer from that practice; neither is the application of sulphur dusted over the plants safe in all cases, as it frequently causes quantities of the leaves to fall off. Orchids are not so often attacked by this insect as other plants. The humid atmosphere kept up in the houses devoted to them keeping it in check, yet the introduction of an infected plant will sometimes cause a good deal of trouble amongst the thin-leaved species, such as Dendrobiums, Lycastes, Sobralias, Odontoglossums, and some Oncids, and if a considerable number of plants be affected before it is discovered every leaf must be regularly sponged with clean water until it is eradicated. Conservatory climbers, particularly such as Mandevillea suaveolens, Kennedyas, &c., are very subject to Red Spider, and it spreads from such plants apace over everything under them on which it can live. Persistent use of the syringe or garden engine is all that can be done in such a case. Some greenhouse plants are very subject to Red Spider, as, for instance, Fuchsias, Statices, Pleromas, Pimeleas, Chorozemas, as well as numerous soft-wooded plants, but a liberal use of the syringe will destroy it. There is one greenhouse plant which Red Spider seems to like better than almost all others, viz., the Glory Pea (Clianthus puniceus). Wherever this, or anything that is similarly subject to this insect, is grown, they should be examined during the growing season every few weeks, for if neglected, and the insect permitted to thoroughly establish itself, it not only completely spoils the plants upon which it first makes it appearance, but spreads to any others standing near them. Pimeleas should be regularly syringed during the growing season every evening, getting well to the undersides of the leaves, for if these plants ever get thoroughly infested with this insect, they never afterwards get into a free habit of growth. Even Heaths, if placed in contact with plants suffering from this pest, will be seriously damaged by it, if not discovered before it has got much hold of them. For any plant of slow growth, which retains its leaves naturally for years, it will at once be obvious that the destruction of its foliage is far more serious than in the case of deciduous plants, or such as are of quick growth, and consequently are enabled to recover from any injury of the kind. If the leaves of plants grown for the beauty of their foliage, such, for instance, as Cordylines and Dracænas, be injured by the ravages of insects, they can never be replaced, as, when once they get yellow, which they quickly do through the effects of this insect, they fall off prematurely. Red Spider does more harm to Vines than all other insects put together. Where it has established itself during the season, as soon as the leaves are off, the Vines should be pruned, taken

down, and the oldest outside bark removed, without stripping it too closely, getting well into any hiding-places where the eggs are deposited; then paint the whole of the canes thoroughly, from the collar to the extreme point, with a dressing of water, clay, and a little soot mixed to the consistency of thick paint, to which add 1 lb. of flowers of sulphur to each gallon. Scrub all the wood and ironwork thoroughly with soap and water and limewash all the brickwork. If there be an inside border, remove 2 in. of the surface-soil, and add an equal amount of new material. When the house is again started, and until the Vines come into bloom, use plenty of moisture in the atmosphere, and syringe regularly overhead. Those who aim at high-class Grape-growing, generally cease syringing after the opening of the first bloom; but the amateur had better begin syringing again as soon as the berries are set, and continue to do so daily until the fruit begins to colour; it will make the bloom thinner, and so far will injure the appearance of the fruit, but the chances are that the Vines will finish the crop better without distressing them half so much as if the syringe had not been used after the flowering stage, for the Spider is almost certain to make its appearance before the fruit is nearly ripe if the syringe be not used. In the case of Vines the most effectual means for its destruction is the application of sulphur to the pipes or flues, but if the house be flued, care must be taken that the sulphur is not laid on the flue too near the furnace, or the consequences may be most disastrous on account of the ignition of the sulphur. With hot-water pipes this cannot occur. To one part fresh lime add two parts flowers of sulphur, and mix with as much water as will bring it to the consistency of thick paint. On a mild, dull evening, if possible, get the water in the pipes as near boiling as can be, close the house and impregnate the atmosphere with water, then regularly paint the pipes over with the mixture. If the weather be dull, so as to require little or no air during the following day, so much the better. An almost general impression prevails that if sulphur be applied to the pipes before the berries are stoned, the skin will be injured. In the case of tender-skinned sorts such will be the case, but Hamburghs, Muscats, Alicantes, or Lady Downes will not suffer. Where it can be managed one of the best remedies for Spider is to keep the atmosphere during the earlier stages of growth moist and continually charged with ammonia, either by means of a thin layer of stable litter (occasionally renewed) on the floor of the house, or by sprinkling the floor and walk with manure-water, or, better still, painting the pipes with guano in the same way in which sulphur is used. A moist atmosphere is one of the best preventives, for so long as the atmosphere of the house is moderately moist and the plants can be syringed once or twice a day it makes very little headway, but immediately these conditions are changed it spreads with extreme rapidity. Syringing the plants thoroughly is one of the best remedies, and when Grape Vines become infested the house should be shut up rather early in the afternoon and the Vines be well syringed. This can only be done before the Grapes begin to colour.

Sulphur.—The fumes of sulphur are most destructive to Red Spider, and the hot-water pipes in Vineries, Cucumber-houses, or Melon-pits, to which Red Spider finds its way, should be sprinkled with sulphur occasionally, or be painted with a mixture of sulphur and clay. For the first two or three days after the application of sulphur the pipes must not be made so hot that the hand cannot be laid on them with comfort, or the fumes will probably be so strong that the tender leaves will be injured. Sulphur, combined with daily syringing, is said to succeed well when soap mixture cannot be applied. Sulphur, however, is a very dangerous remedy, often doing as much harm to the plants as to their enemy, especially in the case of Grapes. Red Spider in Orchid-houses must be guarded against by means of a liberal use of the syringe and abundance of fresh air. If, however, the insects have obtained a foothold, eradicate them at once by repeated fumigations with Tobacco-cloth or rag. It is better to fumigate gently on two or three successive evenings than run the risk of burning the foliage by filling the house too full of hot smoke. If the plants be gently sponged over occasionally with tepid water, it will do much towards keeping them free from dust and insects.

Room Plants.

Room plants are so frequently affected by insect-pests of all descriptions, especially in the confined atmosphere of towns, that they require to be placed under a separate heading. The family of aphides supplies by far the greatest number of the pests which infest plants grown in rooms, and on account of their minuteness and remarkably rapid propagation they are very difficult to extirpate. The means both of preventing their devastations and also of extirpating them where they have established themselves, consist in good culture, cleanliness, fumigation, sprinkling or washing with various liquids, and dusting with good insecticide powders. By good culture, which includes ventilation at the proper time, and keeping the plants in a position not too warm nor too far from the light, the plants are enabled to form strong, healthy leaves, which are less liable to be attacked by such insects than if they were less favourably circumstanced. By attending to cleanliness all the decaying leaves will be removed on which the eggs and young of the insects often lie. When young shoots and leaves are much infested with them the best thing to do is to cut them off altogether and burn them, as when so attacked they. even when thoroughly cleansed from insects, are usually distorted or perish soon after. Plants from which they are to be removed should be shifted from among the other plants into a place where no others are near them. The stem-shoots and both sides of the leaves should be carefully brushed and then washed with warm water and a sponge to remove the "honeydew" with which the stems and leaves of such plants become covered. If the infested plant be small, take three or four Laurel leaves, beat them all over with a hammer, so as to thoroughly bruise them; then place them round or under the plant and cover with a small bell-glass. Let all remain closed for a few hours, and the aphides will be found dead, each hanging by its proboscis only. If this process be repeated within a day or two to make sure, the plant will be perfectly freed, and in some cases it is not again attacked. This way of killing aphides may be acceptable to those who dislike Tobacco smoke; all danger arising from an overdose of it to a very tender plant is avoided; and the Laurel is so generally grown, it must be almost everywhere at hand for the purpose. The pot and the surface of the soil should, in all cases, be cleaned and thoroughly freed from all insects which may have fallen on them. This is the surest way of getting rid of the mealy bug and the shield scale, which do not appear to be much affected by fumigation. Moreover, when the green fly (aphis) has been killed by fumigation, the plants should be afterwards sponged over. Fumigation with Tobacco is the only means that can be employed. In rooms that are usually occupied Tobacco should not be used, as its offensive smell will remain for weeks afterwards. The plants should therefore be fumigated in a small room set apart for this purpose, or under a bell-glass of suitable dimensions in a large room. When fumigation is employed against the mealy bug, thrips, &c., the smoke should be made very dense, and should also be repeated after a few days in order to kill any insects which may have been hatched since the first fumigation, care being taken not to fumigate more than is necessary. Light fumigation with Tobacco may be used with most plants without injury to them, provided they are not placed too near the vessel containing the heated coals. Strong fumigations should not be employed with plants which have tender leaves or leaves covered with hairs, such as Heliotropes, Gesnerads, Melastomads, as the total loss of the leaves is often the consequence of such treatment. The best thing to use in sprinkling is a solution of the genuine Persian Insecticide mixed with water. About 3 oz. of this Insecticide should be put into a 6-oz. glass bottle; the bottle should then be filled with methylated spirit, and left corked for about eight days in a warm place. About a 200th part of this should be added to water warmed to about 123° Fahr., and sprinkled through a fine syringe on the leaves and stems affected. The evening should be selected for the operation, and the sprinkled plants should be placed for the night under a glass, or in a cellar, or covered with oil-cloth, to prevent the rapid evaporation of the mixture. The fumes of the evaporating poison will destroy any insects which may have escaped the sprinkling. This is an excellent remedy against aphis, thrips, and red spider. When it is used against the mealy bug or the scale

insect, one part of the mixture to fifty parts of water should be employed, and the sprinkling must be very thorough. A solution of black soap and guano may also be used, but it is not so effectual. Brushing and sponging is a still better plan than sprinkling, as the crevices and under sides of the leaves are more effectually cleaned in this way, after which a sprinkling of strong liquid insecticide, or a mixture of Tobacco-water, potash, and black soap will be useful; the plants so sprinkled should be washed with clean water next day. The last remedy mentioned is dusting with insecticide powders. When these are used, the plants should have been previously sprinkled with water, which will retain the powder better and prevent its being scattered. The principal kinds used are the Persian Insecticide, Tobacco-powder, lime, wood and peat ashes, gypsum, and for the mealy bug and the scale powdered sulphur. When cleaning the plants, all tyings of bast-mat, &c., and the sticks to which the plants are fastened, should be removed, as well as all loose chinky bark from the stems, as these are generally full of eggs. The remedies for the other insects feeding on room plants will be found under their respective headings.

Rose Pests.

There are at least half-a-dozen caterpillars that prey upon the Rose. The Rose Maggot is about one of the most mischievous of them all, and is very annoying to the Rose grower, boring into the best buds, and destroying many a cherished hope of first prizes. There seems to be no possibility of escape from it; every year it makes its appearance, and, if not destroyed in the spring as it comes to life, scarcely a perfect flower will be obtained, especially early in the season. At the time of pruning, every bit of the prunings, with the pips, if any remain, should be carefully gathered up and burnt. As soon as the shoots begin to push, and the leaves expand, the larvæ will make their appearance; they may easily be detected by the web they spin, coiling themselves up in the young leaves. It is here they must be looked for with care and destroyed, going over the trees once a week, crushing them with the fingers, for if allowed to remain, as soon as the buds make their appearance they will spoil them. In the usually confined beds of the amateur and over-sheltered Rose gardens of private establishments, this insect is much more prevalent and destructive than in the extensive open grounds of the grower for sale. The more exposed situations of the latter appear to be uncongenial to this and other insects that infest the Rose. The other caterpillars which infest the Rose are only to be got rid of by the above means. A species of White Scale (Chermes rosæ) sometimes occurs in such quantities on the shoots of young Roses that they appear to be covered with a white crust; they do not, however, adhere very tenaciously to the bark, and are easily removed by brushing the shoots with a stiff brush. The best time to do this is before the buds appear.

Rose Saw-flies.

There are five different Saw-flies which infest the Rose, viz.:—The Yellow Rose Saw-fly (Tenthredo rosæ), the White-banded Saw-fly (T. cincta), the Common Rose Saw-fly (T. rosarum), the Double-horned Rose Saw-fly (T. difformis), and the Yellow-banded Rose Saw-fly (T. zona). The only means of getting rid of these pests is by careful hand-picking, and by cutting off all shoots and buds as low down as possible directly they show the slightest sign of being attacked by the insect.

Rust on Grapes.

Rusty Grapes are the result of contact with some other object, such as the hand or head, or sudden cold draughts of air against the berries just as they are set, and above all of very hot pipes at that time, which will produce Rust on any variety of Grapes sooner than anything else, more especially if sulphur have been thrown on them. Of many well-proved cases of this it is sufficient to give one which happened in a well-known Vinery. Some years ago the man in charge inadvertently let the pipes get too hot in a Muscat and Hamburgh house when the berries had just set; the pipes were so hot as to smell strongly and blister the hand when held upon them. They were not so long, however, for in anticipation of the consequences the pipes were emptied as soon as possible, but not soon enough to save the Grapes; the rust was visible a day or two after, being worst round the ends of the houses and along the front—in fact, everywhere near the pipes, and gradually getting less and less further up the roof. The Hamburghs were the worst affected, but some of the Muscats were bad enough. Lady Downes and Black Alicante seem less susceptible than most other varieties, but they take it occasionally. The best thing, therefore, is to avoid all these causes, and rather do with low temperatures in cold weather than too hot pipes.

Scalds and Burns.

The principle upon which scalds and burns are now treated is that of excluding them as much as possible from the action of the air. The remedies for ordinary scalds and burns are of so simple a nature that any one can apply them in the absence of a medical man. Where the injury is severe, Olive oil mixed into a thick cream with finely-powdered slacked lime, whiting, or flour should be laid thickly over the place affected. Where the injury is slight prick the blisters in two places, absorb as much of the water with a soft cloth, and wash with tepid water. The burn should then be well floured from an ordinary dredger and wrapped up in soft cloths. Great care should be taken not to break the blister, but only to prick it, otherwise the air will get to the tender part, and possibly give rise to a painful sore. The flour should not be removed until the wound is nearly healed, except gathering sets in, when it should be washed off with warm water and Linseed or bread poultices applied in its place. If the pain be very great, relief may be obtained by plunging the part affected into cold water without removing the bandages.

Sealing Fruit Bottles.

The following plan for sealing bottles of preserved fruit is highly spoken of:—Cut circular pieces of thick, stout cloth sufficiently large to tie over the jar or can. On these pour enough bottle cement to cover a space that will fit the opening and extend over the rim. While filling the jars lay the cemented covers on the bottom of the stove oven to soften. When the jar is ready, wipe the rim dry and apply the cover, cement side downwards, smoothing out the wrinkles and tying it with a strong string. Afterwards cover the top with some of the cement thinly spread. A few minutes will show, by the depression of the cover, that the contents are secure. This is one of the cheapest, easiest, and most expeditious ways of sealing fruit bottles. The cement is made with 1 oz. resin, 1 oz. gum shellac, 1 cubic in. of bees'-wax. Melt these in a tin cup and mix thoroughly. Use a gentle heat to melt or remelt, as great heat may granulate the shellac.

Skeleton Leaves and Flowers.

There are two ways of preparing these beautiful objects, one by allowing them to rot spontaneously in water, the other by boiling them in a solution of permanganate of potash or a mixture of lime and soda. Winter is a bad time for making skeleton leaves. The leaves should be gathered when at their prime—that is, when the earliest leaves begin to fall from the trees—and all that are broken or damaged in any way should be rejected, for, unless you put in leaves with perfect skeletons, you can never take them out. Appearances are often deceiving, and many an apparently perfect leaf (covered, of course, when put into the bath with its skin and pulpy coat) becomes an imperfect skeleton, the fibres decomposing as well as their envelope of pulp; but the least imperfection can never be improved or removed. Let no time and patience be uselessly expended on any, therefore, but the most perfect leaves. Partly decayed leaves are, therefore, out of the question; young ones equally so; what you require primarily and fundamentally is the perfect and mature leaf. Brown spots or specks of any kind upon a leaf render it useless for the purpose of skeletonizing. Those which bear the operation best are evergreens; the reason will, from the previous instructions, be at once apparent; and it will be equally apparent that the soft leaves of very quick-growing plants of annuals, &c., are incapable of the process; hence, we generally see the Holly, Ivy, and Magnolia; and to these we may add, as very suitable for the purpose, and affording variety and elegance of out-

line, and that fibrous network we term the skeleton, and which, by-the-bye, is as peculiar to each individual kind of leaf as its form, the Orange, and Lemon, the Pear, Rose, Willow, Sycamore (very beautiful), Oak, Poplar, Hawthorn, Fig, &c., also the Butchers' Broom, the petals of the Hydrangea, the fruit of the Thornapple, and of the winter Cherry. Leaves containing much tannin, such as those of the Oak, Chestnut, Elm, Willow, Sycamore, Walnut, Hazel, &c., should be separated from the others, as not only do they take a long time to decompose, but the tannin impregnates the water, and prevents the decomposition of any which may be under maceration at the same time. Having obtained your stock of leaves, seed-vessels, &c., take an open earthen pan that will hold a gallon or more, put the leaves into it, and pour over them sufficient rain-water to cover them. Let the pan remain exposed to sun and weather without changing the water (gently and carefully stirring it now and then) until the outer coating or green part of the leaves is pulpy and sticks to the finger. This will depend on the water, the weather, and the kind of leaf; some leaves, such as the Magnolia and India-rubber, require several months, others a few weeks only. They are then to be taken out and washed by shaking them about gently in water, and placed in a shallow earthenware pan, keeping them steady by pressing the finger on the stalk, while the decayed portion is removed by a small, rather stiff, short-haired brush, when the woody fibre or skeleton will be displayed. When perfectly cleared from cuticle, &c., bleach the leaves in a solution of chloride of lime made by adding two tablespoonfuls to one gallon of water. The operation of bleaching may be expedited by adding a tablespoonful of vinegar to the solution. When the leaves are taken out of the bleaching liquid put them into clean water for a short time, and then carefully dry them, either between blotting paper before the fire or in the sun, after which they may be pressed flat in books. The best leaves for skeletonising are those of the Plane, Pear, Lime, Poplar, Sycamore, Tulip tree, different kinds of Ivy, Holly, Box, St. John's Wort, scarlet Passion-flower, Pepul tree, Wistaria, Eryngium maritimum, Carduus benedictus, Magnolia (various sorts), Alstrœmeria, Thistles, Barberry, and several of the Nettles. Seed-vessels—Stramonium, Campanula, Carthamus tinctorius, Tea tree, Mallow, Honesty, Hyoscyamus, Lavatera, Malope, Canterbury Bell, Poppy-heads, and the Winter Cherry, which is very beautiful. Professor Church, of the Agricultural College, Cirencester, gives in the "Chemical News" the following method for making skeleton leaves:—"The leaves are boiled for two minutes, then transferred to a strong solution of permanganate of potash, and gently heated. In an hour or two the laxer tissues may be easily removed by means of a brush. Sulphurous acid, or a solution of chloride of lime, may be used for bleaching them. The stains of permanganate of potash upon the fingers are easily washed off by dilute sulphuric acid."

Shanking in Vines.

This is one of the most puzzling diseases with which the gardener has to deal. The disease is incidental to bad culture and certain soils, and attacks the foot-stalks of the berries at or after the stoning period when the berries are changing colour. They lose their fleshiness, have a disagreeably acid taste, and soon shrivel and drop off if the bunch be shaken. In aggravated cases the whole crop is sometimes lost for several years in succession. Various causes have been assigned for the disease: such as great disparity between the temperature of the border and that of the Vinery, heavy cropping, excessively high temperatures, &c. No doubt debility, arising from any cause, will help to bring on the disease, but it is a fact that it will attack in its worst form Vines that possess the greatest apparent health and vigour, as regards wood and foliage, and where the highest skill is brought to bear on their culture. The only preventive, therefore, is to keep the Vines in as healthy a state as possible. The disease seems to be constitutional, and a remedy that will cure one Vine will leave another untouched. Whatever induces healthy vigour will tend to prevent shanking. C. W. Quin.

Queen Mary's Thorn.—This weeping form of the common Hawthorn is not often seen; it forms as large a tree as the common form, and droops gracefully. There is a fine specimen of it in the Edinburgh Botanic Garden.—V.

SPREADING SHRUBBY ST. JOHN'S WORT.

(HYPERICUM PATULUM).

With the number of the "Revue Horticole" for May 1, 1875, was presented an admirably drawn and delicately coloured plate of a variety of shrubby or hard-wooded St. John's Wort, said to be the variety introduced into Europe from Japan some ninety years ago by the celebrated botanist and traveller Thunberg under the name of Hypericum patulum, and figured by him on t. 17 of his "Icones Plantarum Japonicarum," and also more recently in the Bot. Mag., vol. xciv., t. 5693. The plant figured in the "Revue Horticole" by M. E. A. Carrière had been sent to him by M. J. B. Oudin, a nurseryman at Lisieux, who claimed to be the reintroducer of the plant into Europe (as it was almost, if not altogether, lost to cultivation), having received seeds of it direct from Japan. Being well acquainted with the plate in the Bot. Mag., and having also examined and made a tracing of the uncoloured plate in Thunberg's "Icones" of H. patulum, the variety figured by M. Carrière did not seem to me to agree with either of them, and I wrote to the editor of the "Revue Horticole," pointing out several discrepancies and saying that I did not think his plant was H. patulum at all, but probably H. oblongifolium, to which he replied that he had neither of the works I mentioned to refer to, and could only figure plants that were sent to him and with which he was not himself previously acquainted under the names furnished to him by the senders. This answer not being by any means satisfactory to me, I sent to M. Oudin for a plant of the variety furnished by him to M. Carrière; this has bloomed well with me this autumn, and is in my opinion decidedly neither the variety figured by Thunberg in his "Icones," as the blooms are nearly one-third larger in size, nor the plant figured in the Bot. Mag., as the blooms are of a deep golden yellow instead of the pale straw colour they are represented to be; neither is it, as I at first thought probable, H. oblongifolium, as its blooms, though the same shade of colour, are smaller in size than those of that kind, being in fact intermediate between it and the small variety known as H. uralum or nepalense, and presenting also a distinct structural difference. It therefore seems to me to be a new and beautiful intermediate variety of this ornamental family of autumn-flowering shrubs, and a free and continuous bloomer for which a distinctive name has yet to be found. It is not, however, evergreen, as it was said to be by its sender-out, a merit possessed, as far as I know, by none of the shrubby varieties of Hypericum as yet cultivated in our gardens. I believe this so-called Hypericum patulum was introduced into England by the New Plant and Bulb Company, of Colchester, whose manager may have some further information to give concerning it, as he has doubtless grown it on a larger scale than I have done.

W. E. G.

Clarke's Gardeners' Friend.—I had some bottles lately sent to me for trial of Clarke's Gardeners' Friend, or Mildew Eradicator, a mixture for destroying mildew on Vines, Peaches, Nectarines, Roses, and Verbenas. We have now a large number of insect destroyers and mildew preventives, so that gardeners may henceforth set these pests at defiance. The new candidate for public favour will, I have no doubt, stand high in the list for the purpose. Having only had it late in the season I had not an opportunity of trying it for mildew except on Roses; but I found it most effectual in eradicating this pest from a collection of Tea Roses in pots. It leaves rather an unsightly, whitish tinge on the foliage after the plants are operated upon, but syringing with soft water afterwards will wash this off. I have likewise tried it for thrips, which were swarming on some Citron and Lime trees at the back of a warm conservatory. I used it double the strength of that recommended on the label for mildew, and found that it did not hurt the foliage. It has eradicated the thrips for the time being. The fluid seems to require to be used immediately, as the air has great effect on its colour and strength.—William Tillery, *Welbeck*.

Spring Gardening.—As this is the time of year for planting spring beds, perhaps the following suggestions may be useful. Experience has shown us that the undermentioned beds are very pretty:—(1) Round, raised bed, 9 ft. in diam.—central block, Alyssum saxatile compactum, belted with a broad band of The Tory Viola, and edged with a variety of Arabis albida. (2) Corresponding round bed of similar size—central block, Golden Gem Viola, belted with a broad band of Blue King Pansy: this belt was ringed with one row of soft-coloured Pansy, and the whole edged with the above-named Arabis. (3) Round bed as before—carpeted with Myosotis dissitiflora, pierced with Cottage Maid Tulip, and edged as above with Arabis. (4) Round bed as before—carpeted with Sedum acre aureum, pierced with Tulip Crimson Pottebakker, Aubrietia græca: in this case the carpeting was perfectly solid. Small pieces of the Sedum were dibbled in about 4 in. apart last April, and planted in the reserve

garden: by September the whole was a solid mass, and was lifted in large masses by merely putting the spade about 2 in. under the roots, and lifting the block like turves. (5) Large, round bed—about 15 ft. in diameter, with rockwork edging—central block, Wallflower Belvoir Castle, well pinched back, belted broadly with The Tory Viola, and over the stones was a flowing drapery of Cerastium tomentosum. Between each round bed I have an irregular oblong, taking its shape from the curve of the edge of the lawn. These oblongs are divided into diamond-shaped panels, the divisions being marked by Arabis albida, or Pyrethrum Golden Feather, and the panels are filled with the best kinds of bedding Pansies and Daisies, care being taken to have good contrasting or harmonising colours; their effect is grand in spring, cheerful in autumn, and neat in winter. Of course it would cost a small fortune to buy the many hundreds of plants required, but, as a matter of fact, I have had to buy nothing but the Tulips, everything else having been grown at home with little or no trouble.—Herbert Millington, *Bromsgrove.*

TUBEROUS-ROOTED BEGONIAS AS CUT FLOWERS.

What can people in Covent Garden be thinking about not to have these beautiful flowers in their shops? Rejoicing, as they do, in endless shades of crimson, carmine, red, pink, vermilion, and scarlet, there is a greater choice of tints among them than can be found in any other genus of flowers with which I am acquainted, and I look forward to their appearance in quantity next year, and to their having a great future in a cut state in decorations. Mr. Harry Veitch was good enough to send me a baker's dozen of rooted cuttings this spring, and I prepared for them a raised bed some 2 ft. high of Reigate sand and leaf-mould in equal parts. Having decorated the top of this with the largest and ugliest brick burrs which I could find, placed at intervals, in due time I planted out the cuttings between the "rocks," and for the last six weeks the bed has been a blaze of colours. To test their hardiness, I purpose covering them, at the first sign of frost, with dry Fern fronds (common Brake), which will doubtless preserve them through the winter. The thermometer has several times been down to 32° on the Grass without their receiving any injury, although they have not been quite so floriferous since; but it should also be mentioned that they get very little sun upon them before noon. For button-holes they are wonderfully effective; their stalks, however, are so slender that each flower requires the support of a wire if it be liable to much shaking about. The best way is to cut a piece of stiff, fine wire about 4 in. long, turn one end like a very small fish-hook, and pass the other end down through the centre of the flower until the hook catches in the eye; then one turn of the wire around the stalk secures it in its place. Arranged with a few bits of Mignonette, the effect is both novel and satisfactory. W. T. T.

Select Michaelmas Daisies.—Amongst herbaceous plants that enliven our borders at the present time none are more effective than these. We find, however, amongst them a number of worthless kinds, which are so poor in character and dingy, as to be quite unworthy of a place in even the coarsest of arrangements; and they require the most careful selection, as there is a great amount of beauty in the genus that is invaluable in autumn. Amongst the most effective may be mentioned Aster mutabilis, a most profuse-flowering kind, having medium-sized, bright blue flowers, with a yellow disc. It grows about 3 ft. in height. A. longifolius formosus is a dense-growing variety that bears abundance of flowers of a pleasing rose colour. This is well worthy of general culture. Aster elegans, a somewhat tall variety, produces masses of pale lilac flowers plentifully. A. Reevesi, a dwarf kind, bears a profusion of starry flowers. A. versicolor is a neat-growing sort that bears an abundance of rosy blooms, and A. turbinellus is a fine kind with mauve-coloured flowers.—G. Westland.

Royal Muscadine Grapes on Walls.—A very fine example of this Grape grows against a cottage in the village of Old Basing, in Hampshire. It is planted against the gable end facing the south, and completely covers it as well as extends for several yards round the front facing the east. I never knew this Vine to miss a crop during the six years I lived in that locality, and on one occasion 100 lbs. of fruit for wine-making were cut from it, although previously many of the best bunches had been selected for eating. The soil in which it grows is a stiff loam on chalk. It would be well were all such spaces similarly covered with useful fruit. Several other fine Vines exist in the same village, but none so large as this.—H. J. C. Grimston.

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

Allow me to make a few remarks on Lord Alfred Churchill's scheme (see p. 395) for resuscitating this Society. His lordship, to whom the Society is indebted for his dignified and spirited conduct in the chair at a troubled meeting in 1873, when I had the pleasure of working with him, proposes suggestion No. 2—Fellowships, £2 2s., no entrance fees; no doubt a considerable number of Fellows will be secured at this rate; though I doubt nearly as much revenue as from guinea Fellowships. No. 3—Associates, £1 1s. Judging from what I have seen and heard while seeking for guinea Fellows, the number of Associates will not be very large: people will give a guinea for a whole Fellowship, but I doubt for an inferior position. No. 4—Gardeners in employment of Fellows, 10s. 6d., one of the most experienced authorities, to whom I submitted the form of appeal for guinea Fellows, at once advocated the addition of 10s. 6d. admission for gardeners; the next authority as strongly opposed this. I am hardly competent to give an opinion as to the numbers likely to come in at this rate. No. 5—£2 2s. Fellows only voting tells against the probable number of Associates. No. 6—I think too much cannot be said in favour of great provincial Shows, the Council (of which I was one) which originated them, showed their sense of their value by accepting something very like personal liability rather than they should fall through. The "Quarterly Journal," old stagers say, was not appreciated, Lord Alfred Churchill, as I do, sees the value of journals from his experience of the admirable "Journal of the Society of Arts," published weekly, and giving at once the proceedings of the Society; what lessens the value in the case of the Royal Horticultural Society, is that gardening papers most fully report all that is done in the Society in the same week. I have sometimes thought that the Council might, like the French Government with the "Moniteur," arrange for an official column in the gardening papers, and be responsible for its contents. Any plan of connecting the Royal Horticultural Society as closely as possible with the country Societies, must, I think, be worthy of the greatest consideration. Let me say one word more for guinea Fellowships, which work so well in the Royal Agricultural Society of England, and in the National Rifle Association:—Clergymen, as a body, have done more for horticulture than any other members of the community; they have very many and special calls on their guineas; some of them, and they the most desirable, would spare a guinea to become a Fellow of a really well-working Gardening Society, and could spare no more. In conclusion, may I add that something should be done at once to save the redeeming point of the South Kensington Garden—the conservatory. Let any one with experience of iron and glass structures pay it a visit after rain, as I did; they will see, both by the leakage and rusting, that unless prompt remedies are applied there will be a case of galloping consumption. George F. Wilson.

Heatherbank, Weybridge.

NOTES AND QUESTIONS—VARIOUS.

Bamboo Stakes.—These form the best of all stakes for nursery or garden work, and, being imported largely as a kind of packing and separating material, they are cheap. They require no dressing, or trimming, or rounding, and have a polished surface, better than any paint or varnish could give them. The portion thrust into the ground lasts several years, after which it may be cut off and the stake used in the ground again. They are largely employed in the Lawson Nurseries at Edinburgh.—V.

Deodars from English-saved Seed (see p. 352).—The largest Deodars here which are upwards of 50 ft. high, have produced cones, as have also those at Holnicote during these sixteen or seventeen years past, and young trees raised from them are now some 20 ft. in height. One of the seedlings thus raised is planted in the Royal Gardens at Kew. In a Deodar glen here, where there are a great many trees, catkins are very plentiful some years, but cones are generally scarce.—John Garland, *Killerton, Exeter.*

Autumn-blooming Globe-flowers.—Is it usual for Trollius europæus to bloom freely in the autumn. It is now flowering with me even more profusely than it did in the spring, and its blooms are larger than they were then. Mixed as it is in my border with Anemone japonica alba, Lobelia fulgens, and Salvia patens, the effect is lovely.—E. Farrer, Jun., *Petygards Hall, Swaffham, Norfolk.*

Creeping Speedwell (Veronica repens).—A notice of this charming little plant having appeared in The Garden some time ago, allow me to state that nothing can exceed the beauty of this plant where a deep green is required in geometric carpet or scroll work; it grows amazingly fast, and scarcely exceeds in height a penny piece, bears rolling like Grass, for which in small intricate flower gardens, where the scythe or machines could scarcely be employed, it is an excellent substitute. It maintains its emerald green colour in cold weather; the only objection to it, perhaps, being the short duration of its blooming.—Thos. Williams, *Ormskirk.*

Height of Wellingtonias.—The height of our finest tree here is 44 ft., and its trunk measures 10 ft. in circumference at the base. It was planted in 1858 on an elevated site, the sub-soil of which is solid rock, on which all Conifers do remarkably well here, especially Cupressus torulosa and Goveniana, of both of which we have fine specimens. At Lord Poltimore's, near here, there are two fine Wellingtonias, the height of which is, I think, quite 60 ft. They were planted about the same time as ours, but on level ground, with a wet sub-soil, hence the reason why they are so much higher.—John Garland, *Killerton, Exeter.*

Eclipse Cauliflower.—After two years' trial against all other sorts I find this Cauliflower to be in every way excellent and a most useful autumn vegetable. The flavour is sweet and delicate, and the "flower" melting. Even average-sized heads of it are very large, and its compactness and colour are all that can be desired; its foliage, too, is self-protecting.—H. N.

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

HYBRIDIZATION OF THE POTATO.

SIMULTANEOUSLY, both in the old world and in the new, special efforts have been made during the past few years to improve the different races of Potatoes, and the result is that we have now in cultivation kinds in all respects so good as to seem incapable of further improvement. That, however, is not the case; but during the next decade we shall probably not see such great changes take place as have been effected during the past ten years. The Potato plant presents, in a marked degree, modes of reproduction by which its great prevalence may be easily accounted for. Probably the kind first introduced was little better than the original species, or it may be that in those early days of Potato culture the South American aborigines had succeeded in producing kinds more suitable for human food than the wild sort; but the fact remains that it is only within the present century that the Potato has become an article of general consumption. That amongst the many kinds of Potato known in commerce during the past twenty years there should be a large number of duplicate sorts is due to the fact that the Potato in many instances seeds freely, and generally reproduces its kind. Thus we have many assumed varieties of Ashleafs, Lapstones, Regents, &c., all possessing a family likeness. On the other hand the Potato, when artificially hybridized with the pollen of some other distinctive kind, invariably produces a very varied progeny, and, although none may be better than the parents, it is certain that a large proportion will not resemble them. It also holds true respecting the Potato as with many other plants that the pollen parent exercises the most potent influence upon the new progeny. In the raising of seedlings of all kinds there is a vast amount of interest, but in no case is this interest greater than in Potato raising, especially where the skilful hybridist has been crossing in the hope of producing certain results, and therefore looks with special interest to find them. There is the careful and patient manipulation of the blossoms, the tending and harvesting of the berries, the sowing of the seed in the following spring and patient watching through the summer for the haulm development, the lifting of the produce and marking the chief features of each plant and its produce, the winter storing, the replanting the next year for the most important trial, the eventual weeding out in the autumn, and the final saving only of those for further trial that appear to come nearest to the desired form. Any good collection of Potatoes exhibits wondrous variety in colour, form, and general character, a fact which suffices to show that seedling roots may now and then produce varieties which shall more than repay the raiser for his industry. It is known to all growers that, whilst some sorts blossom and seed freely, others present only a promise of flowers which drop ere they can be utilized for seed purposes. From this it is apparent that those which have a free-seeding habit are likely to be most generally used both as seed and pollen parents, but great seed-productiveness is an undoubted evil, inasmuch as fertility is obtained at the cost of the tuber crop; some therefore remove the blossoms in order that the root produce may have all the strength of the plant. Sorts, however, that are not great seed producers are generally most liked, and it is enough to mention amongst these the Ashleaf, Lapstone, and other good kinds, including the Early Rose, Snowflake, and most of the best American varieties, all of which produce blooms sparingly. The process of hybridization as regards Potato flowers is simple enough, but it is not worth doing in a haphazard way. The experimentalist should first fix upon some improvement to be effected in certain kinds, and then work for its production, and it is well also to remember that the pollen parent is invariably the most potent progenitor; therefore where it is desirable to increase the size, for instance, of any one kind, otherwise good, but deficient in that respect, some large sort should be used as the pollen parent. The operator, having chosen the seed parent, selects a promising bunch of flowers in an early stage of development, and from these carefully detaches the pollen organs and stamens, which in the Potato flower consist of a number of bright yellow tubes that cluster around the pistil; this must be done with sufficient care to prevent any of the pollen being detached. On the succeeding day or so, the weather being dry, crossing may be attempted. The pollen parent must therefore be found, and the operator, taking the flower between his two forefingers, must hold it in such a position that the nail of his thumb will be immediately beneath the flower. The pollen tubes may be quickly touched with a penknife, when the fine powder will be thrown upon the nail. This should be carried to the flowers to be fertilized, the stigma of each of which must be touched with it. If this be done carefully in the case of three or four flowers, some, if not all, will be almost certain to "take," and if a distinguishing mark be fixed to the bunch operated upon there can be little doubt that enough berries will soon be found to produce an abundant crop of seed. These berries should be gathered as soon as they begin to look brown; perhaps it is a safe plan to tie a piece of gauze over the seed-berries, as they are thus secured in the event of one or more falling unperceived. The berries with a label denoting the cross which produced them, should be stored in a small box until sufficiently decomposed for the seed to be cleaned out, and may be put into a packet, and taken care of until April, when it may be sown in pots or pans under glass in a cool house or frame, heat being undesirable. Whether or not the young plants should be grown in pots under glass the first year will depend upon the quantity of seed, and upon the convenience of the grower. To many it is a matter of importance that the seedling plants should not be affected by the disease, as, should they be few in number, an unpropitious season might sweep them all off; but, where the seedlings can be counted by hundreds, it is best to prick them out into lines about 15 in. apart in some warm spot, where they can be brought to maturity as early as possible. In either case it will be found necessary to discard a considerable number the first season, as it will be found that some are comparatively valueless, whilst others possess a promising look. Each root of tubers to be saved should be placed separately in small boxes, or in a large one having many partitions, and thus be stored for the winter. Another year's growth will be productive of much interest, and assuredly of another considerable reduction of the number; and each successive season's growth will produce similar results, until a wise cultivator will be content to have in this way obtained half-a-dozen good kinds. Amongst famous Potato-raisers at home Fenn and Paterson must not be overlooked, whilst America has Pringle, Brownell, and Bresee. Mr. Paterson has left behind him, as evidence of his industry, Victoria, Scotch Blue, Marchioness of Lorne, and others. Mr. Fenn has given us Onwards, Early Market, Rector of Woodstock, Bountiful, and International, and he has still many new sorts in reserve. In the United States Mr. Bresee has raised and sent us Peerless, Prolific, and Early Rose; Mr. Brownell, his well-known Vermont Beauty and Superior; while Mr. Pringle has a well-deserved fame as the raiser of Alpha, Snowflake, and the recently introduced Ruby. Americans have a better mode of recognising the raisers of popular Potatoes than we have. With us many sorts have been put into commerce promiscuously, but of late matters in this respect have improved. Mr. Fenn has sensibly suggested that for the future it would be well to have a statement of parentage issued with each new sort. If this were done, coupled with the raiser's name, it would assist in giving an individuality to each sort that would prove of the greatest service. During the past three years some practical efforts have been made on both sides of the Atlantic to combine by crossing the best forms of both English and American kinds, Mr. Fenn at home and Mr. Pringle in Vermont being the operators. Whatever may have been Mr. Pringle's success, it is certain that Mr. Fenn's first effort has resulted in the production of one of the best and most promising collections of seedlings ever raised in this country. It was Mr. Fenn's desire to infuse into his fine white round variety, the Rector of Woodstock, some of the increased size and excellent qualities of Pringle's Snowflake, but this result

could not be obtained in consequence of the entire absence of pollen from the flowers of the latter variety. Disappointed in this respect, he turned to his beautiful Red Kidney named Bountiful, and hoped to fertilize that with the pollen of Brownell's Vermont Beauty, but here again the same cause prevented the experiment being carried out. As a last resource pollen was taken from the Willard, a pretty red kind, and applied to Bountiful, two seed-berries being produced. At the same time pollen of Bountiful was applied to Late Rose with the same results. This took place in the summer of 1874, and in 1875 the seedlings were raised in large pots under glass, producing tubers varying in size from that of a Pea to a Filbert. During the past summer these have undergone a second season's growth in the old Woodstock rectory garden, and in some instances the result in crop was marvellous, taking into account the very small size of the sets. The haulm presented features of the most varied kind, and gave no indication of the nature of the root produce, but that when lifted displayed many beautifully-coloured Kidneys, some of them being undoubtedly enlarged Bountifuls, and some were of the whitest possible texture, thus showing that the Potato, when hybridized, is so sportive that it will produce tubers of many shapes and colours. The best results were obtained from the Late Rose cross, of which Bountiful was the pollen parent, and so good were the tubers that at least two dozen sorts were kept for further trial. That some of the large cropping qualities of the Late Rose were secured was evident from the fact, that three minute sets of one kind produced over 7 lb. of fine tubers, and in another case one single small set produced a root of fine white tubers, out of which Mr. Fenn was able to select nine suitable for exhibition at the recent International Potato Show. Twenty years ago (writes Mr. Pringle) there was little disparity apparently between the then English and American Potatoes. Now most of the varieties grown here have originated since that time, and have descended from semi-domesticated varieties imported from South America—thus from such an one Mr. Goodrich got the Garnet Chili; Mr. Bresee raised his seedlings, the Early Rose, Peerless Prolific, &c., and fertilizing the Early Rose with pollen of the best of the old sorts, I obtained Snowflake, Alpha, and Ruby. It is interesting to find Mr. Pringle bearing witness to the fact as exemplified here, that not only are American sorts somewhat destitute of pollen, but also that Snowflake even there seldom opens its blossoms, which drop whilst yet unexpanded. Being anxious to test the value of species for hybridization, Mr. Pringle has, in addition to Solanum tuberosum, also obtained the new Mexican species, S. Fendleri, but so far he has found that although fertilized blooms will produce berries, yet these fall before they are half matured. He kindly sent Mr. Fenn tubers of this species, and from one a good strong plant was grown in the Woodstock Garden this summer. Crosses with this kind were effected, but with what result it is yet premature to say. The foliage of this species bears a close resemblance to that of the Narrow-leaved Ash, and the tubers resemble small ones of Tropæolum tricolorum. That any beneficial result will follow such a cross is doubtful, our present Potatoes being so many generations removed from the imperfections belonging to species. Enough has been said to show that hybridization of Potatoes possesses merits and interest far beyond common acceptance. A. D.

Trailing Varieties of Tropæolum Lobbianum.—Thanks to the continued absence of frost trailing Tropæolums are still in beautiful bloom, not a leaf being injured, while the plants are in luxuriant growth. This glorious autumn has prolonged many tender plants beyond their usual term of existence, for it is seldom that such as Tropæolums, Balsams, &c., are in bloom at the end of October. The trailing Tropæolums, from the luxuriant growth they make, are admirably adapted for covering up bare spots that are not uncommon in gardens. In large shrubberies, where the shrubs have during the summer and autumn a bald, flowerless appearance, these trailing Tropæolumss answer admirably to light them up here and there, thrusting up their gay blossoms of scarlet, yellow, or maroon amongst the leaves. As soon as touched by frost they should be speedily cleared away, and any unsightliness occasioned by their decay at once removed. Seeds scattered in the spring give stronger plants than those turned out from pots, and produce better results.—M.

FREE-BEARING APPLES.

This is, on the whole, undoubtedly one of the worst Apple seasons on record, as, with very few exceptional places in different parts of the country, the crop is one of the lightest possible description; yet even from failures such as this something may be learnt, inasmuch as even in the worst of seasons there are some varieties that show their superiority over others to withstand the effects of adverse seasons. During the summer and autumn I have been through most of the counties in England, and have noted a few kinds of Apples that show unmistakably their ability to produce an average and, in many cases, a heavy crop during a season like the present, when by far the greater number of sorts are all but a complete failure; and this, be it understood, not upon trees that bear heavily, as is frequently seen in alternate years, and which carried little or no fruit last year, but which were then, as was almost general with all sorts, heavily laden. First stands the Keswick Codlin, that in many orchards east, west, north, and south has been the only Apple that has succeeded at all, whilst numbers of others that in some respects possess more desirable properties, have scarcely produced as many fruits as there were trees; this useful early culinary variety has been laden with fruit. So far as can be judged from the comparatively few places where the sort has been planted in quantity, and the age and size of the trees are such as to admit of forming a fair estimate, the nearly allied, but much larger-fruited, Lord Suffield has been little behind, but its fruit, in many cases that have come under my notice, has been smaller than usual. King of the Pippins in most cases has fruited much heavier than the generality of favourite kinds, as has also Boston Russet, which in many places this autumn I have seen loaded; it is not a large Apple, but very good in quality. Next to Keswick Codlin, for the weight of its produce, is Procter's Seedling, named, I understand, after the individual who raised it some thirty years ago in North Lancashire, outside which locality it seems to be little known, although propagated in some of the local nurseries in that district; it is an immense bearer, keeping well until late in the spring; its fruit is of fair quality for dessert, and excellent for cooking; the tree is very hardy, and a good grower, so far as can be judged from the limited district to which it is at present confined; it possesses all the properties necessary to recommend it for general cultivation, if we except size, in which it may be said to be deficient; it is about as large as Court Pendu Plât, and not unlike that variety in shape, but not quite so oblate, neither has it so much colour; but size, even in a culinary Apple, I look upon as of questionable importance; quality, and the weight of fruit that any particular variety will produce, are the most important essentials; very large Apples are rarely heavy croppers, and they generally suffer much through the effects of the wind. T. Baines.

Graft Hybrids.—Evidence that it is possible to produce hybrid and cross-bred plants by grafting is fast accumulating. Mr. Meehan has made interesting experiments in reference thereto, the results of which he thus describes in the October number of the "Gardeners' Monthly":—I took the Rhode Island Greening and the Red Astrachan, in every respect two very distinct varieties of Apple. The grafts with a single bud were split as nearly through the centre as possible, and a piece of each kind fitted together so as to appear one complete scion. Twelve of these were grafted, three of which grew and two have fruited; neither are Rhode Island Greening, and the two are unlike each other; one of these has a flower like the Rhode Island Greening, and the flower of the Red Astrachan is rosy and in many ways distinct from the large white one of the Rhode Island Greening; but the fruit is in many respects similar to that of the Red Astrachan. The second variety has the flower similar to that of the Rhode Island Greening, and the fruit somewhat the colour of that of the Red Astrachan, ripening about the same time, but is but half the size, very much flattened, and with a slender stem nearly 2 in. long, and as much like that of a Siberian Crab as can be. There is no doubt that two varieties, distinct from their parents and distinct from each other, have resulted from this graft process. We know now—as the old Roman and Greek gardeners knew and wrote centuries ago—that buds can be united, and the result is the blending of characters, forming a new individual kind—a true hybrid.—B.

Wall Drapery.—For this purpose nothing can exceed the beauty of the Virginian Creeper and Ivy mixed, the bright scarlet of the one contrasted with the dark glossy foliage of the other being grand in the extreme. I have never seen this mixture so rich as it has been here this season, and one cannot help regretting that it is of such short duration, for just as it attains its greatest beauty, the Virginian Creeper withers away in a few days. It would look well introduced into the shrubbery amongst evergreens, and trained to single poles. —W. Divers, *Wierton, near Maidstone.*

NOTES OF THE WEEK.

THE JARGONELLE PEAR IN SCOTLAND.—It is much to be desired that a race of Pears as good as this for some northern climates could be originated. It is the Pear of Pears for Scotland, and does well fifty miles north of Aberdeen, as well as in many other parts of the country. Some of the trees appear to be a century old or more.—J. O.

PRETTY BERRY-BEARING PLANT (Callicarpa purpurea).—Some dwarf plants—bushes, in fact—are now most attractive in one of the conservatories at the Lower Aston Grounds, Birmingham, where they are bearing dense clusters of glossy, lilac-purple berries in the axils of the current year's shoots. Well grown, this pretty Verbenaceous plant forms a distinct and beautiful object.—M.

LYALL'S CROWFOOT (Ranunculus Lyalli).—Mr. Isaac Anderson-Henry, to whom we are indebted for introducing so many new plants and for raising so many valuable hybrids, has at length raised this remarkably fine plant. He has four seedlings, the blooming of which will be looked forward to with interest by many.—V.

DAHLIAS LATE IN AUTUMN.—Beds of mixed dwarf Dahlias in the grounds belonging to the Crystal Palace at Sydenham are just now very attractive. The principal colours consist of scarlet, crimson, white, yellow, orange, and red, and the hundreds of flowers now to be seen there, backed up, as they are, by fresh green foliage, are very beautiful and striking even at a distance.—P.

PLAGIANTHUS BETULINUS.—This remarkable tree, the Akaroa of the New Zealanders, has been introduced by Mr. Gorrie, of Edinburgh, and is well established in his garden there. It is almost columnar, and peculiar and graceful in habit, the cord-like shoots being pendulous. Thriving so well at Edinburgh, it can hardly fail to do well in sunnier districts.—J. O.

VERONICA CORYMBOSA.—If an imitation bunch of blue Violets be desired, it may be found in the flower-heads of this Veronica, which is both pretty and useful at this season. It is well worth looking after, for at this time of the year blue flowers are scarce.—H. K., *Floors Castle, Kelso.*

THE COMPASS PLANT IN AUTUMN.—Lovers of distinct and curious herbaceous plants need hardly be advised to add Silphium laciniatum to their collections. But it is as a fine autumnal flower that we now desire to call attention to it, having noticed a fine specimen in Miss Hope's garden near Edinburgh in the middle of October. The clear, rich, yellow rays of the large flowers are very striking on stems 7 ft. high.—V.

LAPAGERIAS, WHITE AND RED.—About two years ago I planted in a border, 15 in. wide, 16 in. deep, and 21 ft. 7 in. long, one plant of Lapageria alba and three of Lapageria rosea, to form a screen for the back wall of a conservatory. The white variety made four growths, each about 21 ft. long; and the red one several about 20 ft. long. On one shoot of the white kind we have now sixteen blooms, and on others six, seven, eight, and nine blooms respectively; the greatest number of flowers on a shoot of L. rosea is ten, and altogether this season we have had 137 flowers on our white Lapageria.—E. C., *Ferniehurst.*

THE CLIMBING BUTCHER'S BROOM (Ruscus androgynus).—As an elegant evergreen climber, with foliage as handsome as that of the Ailantus, few plants surpass this either for a cool or warm conservatory. It may now be seen in perfection at Kew, in the Chelsea Botanic Garden, and also in the Crystal Palace, where it is used in a most effective manner for dressing the iron columns and girders from which its fresh green, pinnate, foliage-like branches, droop most gracefully. The comparative rarity of so beautiful a plant as this arises in a great measure from the difficulty which attends its propagation. Seeds of it grow freely, but they are rarely produced on plants in this country; root-cuttings, however, might prove successful.—B.

THE POTATO DISEASE.—This has appeared in a very virulent form in all the late kinds of Potatoes not yet lifted, or only got up during the present month, a circumstance which has proved a great blow to growers, as from the comparative shortness of crop of the early kinds they naturally imagined that their late crops would make good the deficiency. No doubt much of the stock now affected should have been lifted earlier, and had they been got in last month, even though none too ripe, they might have been marketed in sound condition. Our prospect of a Potato supply for the winter is not a favourable one, and if the crops of foreign growers be deficient we may expect Potatoes to reach a high figure before the early crops come in next year.—A.—Mr. Bell, writing to us from Strathfieldsaye, states that Potatoes that were taken up apparently sound, are now more than one-half diseased.

AUTUMNAL OX-EYE DAISIES.—Cut flowers of Pyrethrum uliginosum and of its late-flowering form, P. uliginosum seratum, have been plentiful in Covent Garden Market during the past week. They remind us of the common Ox-eye Daisy of our meadows, and, being pure white, are well adapted for use in different kinds of indoor decoration.—P.

HARDY HEATHS AS AUTUMNAL FLOWERS.—Among the many notes on "Hardy Flowers Round London" in THE GARDEN, I miss allusion to the bright-blossomed varieties of our own and other hardy Heaths that bloom at this season. Probably the fact that they do not grow so freely about London as in the Edinburgh nurseries and gardens accounts for the omission.—V.

WOODWARDIA RADICANS CRISTATA.—This handsome form of a well-known Fern may now be seen in good condition at Mr. B. S. Williams' Nursery at Holloway. It partakes of the gracefully drooping habit of the species, but is more compact, and the foliage, which is beautifully crested, is found to be a valuable ornament for vases. On pedestals, too, and on other raised positions from which the fronds can droop in a natural manner, this variety produces a fine effect.—S.

SCENTED-LEAVED PELARGONIUMS AS BASKET PLANTS.—Some of the large hanging baskets at Sydenham are very beautiful, wreathed and draped, as they are, with fresh green filagree work quite distinct from the usual aspect of baskets made up of Ferns and green-leaved Dracænas. The plant used is simply the old Stag's-horn, or cut-leaved scented Pelargonium, so often seen in cottage windows, where it is grown for the sake of its fragrance.—A.

THE SHAMROCK PEA IN SCOTLAND.—This pretty trailer is now embellishing with its blue flowers the richly-stored rock-garden at Edinburgh. It is in raised positions, and the stems droop. Few rock-garden trailers are now in flower, making this the more valuable. The only plant that can compare with it in beauty at present is the silvery-trailing Androsace lanuginosa, which is also in fine condition at the same place. The botanical name of the Shamrock Pea is Parochætus communis.

GOLDEN-FLOWERED COMPOSITES.—Mr. W. Thompson, of Ipswich, recently sent us two or three strikingly pretty late flowering Composites. Amongst them was Helianthus orientalis, which has flowers nearly 3 in. in diameter, the ray being bright golden yellow, and the disc dark brown. It is an annual from Texas, and grows about 15 in. in height. Aplopappus ciliatus, another of his flowers, is also very effective, its blossoms being about the same size as those of a Rudbeckia, but clear yellow; and last, but not least, may be named Helianthus cucumerifolius, likewise a handsome plant, the bright golden ray florets of which contrast well with the dark brown disc. These well deserve a place in every garden in which hardy herbaceous plants are grown and appreciated.—B.

A NEW GOLDEN ADIANTUM.—The latest novelty in new Ferns is an Adiantum with golden-powdered fronds similar to those of the Gymnogrammas. The plant resembles Adiantum Capillus-Veneris, but the fronds are much longer than those of that Maiden-hair Fern, and are not produced so thickly, which gives the plant a more graceful appearance. A Fern possessing such good qualities, in addition to the fronds being delicately powdered with gold, cannot fail to be appreciated by Fern growers.—S.

WALNUT-LEAVED SUMACH.—The "Revue Horticole" warns us to be cautious in meddling with specimens of the Rhus juglandifolia or vernicifera, a plant often in great request for decorative purposes, in consequence of the extreme beauty of its foliage. The slightest contact of the naked skin with the leaves, or more especially with the roots of this plant, is apt to be followed by very disagreeable consequences, the milky juice which exudes from these parts possessing the property of stinging in a very marked degree. The phenomena which accompany and follow such contact are analogous to those observed in the case of the Rhus Toxicodendron, or poisoned Sumach, a plant of the terebinthinate order, which was long used in England for its medicinal properties as an irritant and vesicant, and which still holds a place in the Pharmacopœia of the United States.

ŒNOTHERA TRICHOCALYX.—This, one of the prettiest of garden plants, is found chiefly eastward of the Sierra Nevada, from Northern California to Arizona and New Mexico. Young plants of it have a rosette shape, but they soon outgrow it, and throw out prostrate, leafy branches, forming quite a silvery carpet. The leaves are from 3 in. to 4 in. long, deeply notched and canescent; the blooms, which measure 2 in. across when open, are white or tinged with rose, slightly fragrant, and borne in profusion. I planted out one plant from a 3-in. pot early in June, and now (September 8) it has formed a carpet 2 ft. across, and 4 in. to 5 in. high. It is probably an annual, but with us a very shy seed-bearer.—WM. FALCONER, *Cambridge, Mass.*

SUCCULENTS OUT-OF-DOORS IN WINTER.

Now, when rain and wind prevail, is the time to note the value of succulents as bedding plants. During the summer months flowers and tender foliage are gay and pleasing, but as soon as rough weather sets in their beauty disappears; succulents, on the other hand, change only with severe frost. Most of them are hardy, and can be planted out quite early in the season; others are half-hardy, and can be safely trusted out-of-doors long before tender plants of other kinds can be put out. If we except one or two kinds, such as Echeveria metallica and Mesembryanthemum cordifolium variegatum, there are few that cannot remain in the beds until the middle or end of November; and if the hardy Sempervivums and Sedums be so disposed in the bed that they can remain all winter, and the places of the tenderer kinds be filled with Daisies, Violas, &c., the result in all ways will be a great gain. I have recently seen some succulent plant-gardening of the most beautiful and effective kind, including, as it did, green and variegated Agaves, massive Sempervivums, and Echeverias, Silvery Pachyphytums, and Cotyledons, Blue Kleinias, and carpets of Sedums in great variety. In several beds I remarked a good-sized Agave in the centre, surrounded by a belt of flowering Mesembryanthemum, which again was edged with a sloping margin of Echeveria secunda major. Outside of this was a raised star of Echeveria secunda glauca, in the points of which were planted some massive specimens of Sempervivum Donkelaari, canariense, and Phylloides. The surface of the remaining portion of the beds being carpeted with various Sedums, in which were planted other elegant forms of Echeverias, Sempervivums, Pachyphytums, &c. Another entire bed was edged with a sloping margin of Sempervivum californicum and S. montanum. This is an illustration of what can be done with succulents. And at all periods of the summer these beds have favourably compared with those consisting of flowers and foliage.—D.

Autumn Primroses.—Amongst hardy flowers now in bloom might well be classed the lovely single Primroses that are now throwing up their earliest blooms. There is a freshness and beauty in these blossoms that are as acceptable now as in the spring, for the summer is practically the winter of the Primrose, as it does not suffer in cold weather, and, except in severe frost, is always active. Strange to say, in spite of the great heat of the summer, the Primroses in the open ground here have suffered but little, and are now covered with robust foliage; this is the precursor of strong heads of flowers, the earliest of which are now developed. Primroses succeed well in the open ground if removed but once in the year, and that in the autumn. It is a mistake to allow them to remain untouched too long, as in the course of growth a woody stem is developed that eventually produces decay. When lifted and divided each autumn the plant has time to become established before the spring blooming period, and at the same time the development of an elongated stem is prevented.—A. D., *Bedfont, near Hounslow.*

Spreading Shrubby St. John's Wort (Hypericum patulum).—We quite agree with "W. E. G." (see p. 415) as to the incorrectness of the name applied to the St. John's Wort introduced by M. Oudin. That it is beautiful and quite new is an opinion we formed last autumn on seeing same hundreds of it in Normandy clothed with the most luxuriant foliage, and loaded with its large, deep golden-coloured blossoms. In addition to the description given by M. Carrière, we were assured by M. Oudin that its foliage was persistent, which with us it certainly is not. Our plants have this season flowered most profusely, but owing to the excessive drought, and the plants themselves being in an unsuitable position, the individual blossoms did not attain that perfection, or the foliage luxuriance enough to warrant our exhibiting the plant to the Floral Committee of the Royal Horticultural Society, as was our intention. That it has not proved itself to be an evergreen is to be regretted, but that it is a most valuable addition to flowering shrubs there can be no doubt.—New Plant and Bulb Company, *Colchester.*

True Maiden-hair Fern (Adiantum Capillus-Veneris) for Covering Bare Walls.—In a plant house at Messrs. Lee's Nursery, at Hammersmith, this beautiful Fern is growing most luxuriantly on the bare wall surrounding a bed in the centre of the house on which plants are set. The wall in question is about 3 ft. high, some 50 ft. or 60 ft. in length, and thickly clothed from top to bottom with the beautiful green fronds of this lovely Fern. Being a surface-rooting plant, it is better adapted for this kind of ornamentation than most other varieties; and when grown in this way, it is, in addition to having a fresh and dressy appearance, most valuable for cutting for bouquets, &c. When the fronds begin to look shabby, they should be cut off here and there, by which means a continuous succession of fresh, green fronds may be obtained.—S.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

The most attractive plants now in bloom are those which have made new growth, and which are now producing a second crop of flowers, and amongst these may be named the following Yellow Composites, viz.:—Coreopsis grandiflora, C. lanceolata, Helenium autumnale, and Rudbeckia Newmani. Of these the two first are especially attractive, their blossoms being produced in abundance on thick bushes of green woolly leaves. Many of the Bell-flowers are still strikingly beautiful, notably Campanula Hendersoni, C. turbinata, C. Barrelieri, and C. garganica, the last producing a profusion of pale blue flowers, on gracefully drooping stems; for the ornamentation of rockwork or border-edgings this is one of the most precious of all autumn-blooming plants. Scarcely less beautiful are the blue and white forms of Viola persicifolia, now blooming in profusion, Veronica spicata, and V. corymbosa, all still in good condition; Aconitum japonicum, and A. autumnale, too, continue to rank amongst the most attractive of hardy border flowers. The Aster-like blooms of Galatella hyssopifolia have still a cheerful appearance, as have likewise the numerous branching flower-heads of the tall-growing Vernonia noveboracensis. Convolvulus Scammonia and C. mauritanicus are likewise in perfection, and the beautiful blue flowers of Lithospermum prostratum are more effective now than they have been at any other time throughout the autumn. Fresh and richly-coloured blossoms of the stately Dahlia coccinea and its numerous varieties may still be gathered; Gentiana acaulis is now in excellent condition a second time this year; it is growing on some rockwork at Tottenham, where its brilliant blue blossoms are now opening in abundance, quite covering, in short, the shining leathery foliage: to have a good effect, this Gentian requires to be grown in carpet-like masses on banks or rockwork. Sternbergia lutea (sometimes called the Lily of the Field), Verbena montana, and the large-flowered variety of Christmas Rose are also in good condition in Mr. Ware's establishment, in which may also be found Pentstemon Richardsoni and the red-flowered Geranium sanguineum. Sea Thrifts are still flowering freely in the Wellington Nursery, especially Armeria alpina grandiflora and A. cephalotes rubra and alba, the latter a useful variety lately introduced by Messrs. E. G. Henderson, who grow it in the form of edgings, a position in which it has a pretty effect. We also found at St. John's Wood Potentilla alba, Geum montanum, G. aurantiacum, Ammobium alatum, and Plumbago Larpentæ, all in good condition, the last-named being especially attractive just now on some rockwork. Lupinus polyphyllus, a pretty plant at this season of the year, has erect, brightly-coloured flower-spikes, that stand up from amongst a profusion of fresh green foliage. To these may be added Saxifraga Fortunei, Tritoma Uvaria, T. Macowana, the White Japanese Windflower, and many Golden Rods, all of which still continue materially to add to the charms of hardy flower borders. Stevia ivæfolia is a handsome plant just now, being literally covered with dense clusters of small, ivory-white flowers; in order to grow this plant well, it is necessary to assign to it a warm situation, and to afford it some slight protection during the winter months. Handsome, rose-coloured spikes of Polygonum Brunonis are still to be found in abundance, as are likewise the delicate, pink-blossomed spikes of Verbascum creticum alatum. Lythrum alatum occupies a foremost place amongst attractive autumn-flowering plants, its fresh green foliage and branches thickly beset with rich mauve-coloured flowers, rendering it strikingly effective. Some well-established plants of the stately Yucca gloriosa are again throwing up branching spikes of ivory blossoms. Eucomis punctata, an easily-grown plant, is still in good condition; it likes a deep, sandy soil, in which strong plants of it will produce a succession of flowers during several months in the year. In addition to these may be mentioned the following, viz., Petrocallis pyrenaica, Linaria Cymbalaria alba, Trollius asiaticus, Cedronella cana, Sedum Selskianum, Hieracium Auricula, and Achillea ægyptiaca, all of which are still in good bloom. Among the Asters not heretofore noticed, are A. oblongifolius, a tall-growing kind, with a profusion of small blue flowers, and A. puniceus, another tall plant that is strikingly pretty among hardy flowers about the end of October,

Mount Gargano Hairbell
(Campanula garganica).

Hawthorn-scented Pond-weed
(Aponogeton distachyon).

Scarlet-flowered Sage
(Salvia coccinea).

Lily of the Field
(Sternbergia lutea).

Large-flowered Christmas Rose (Helleborus niger maximus).

Pompone Chrysanthemum
(C. indicum fl.-pl.).

Common Nemophila
(N. insignis).

Spreading Dwarf Marigold
(Tagetes patula pumila).

Chilian Wood Sorrel
(Oxalis Valdiviana).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

COTTAGE GARDENING.

Mushrooms.

There is no reason why every one who can obtain fresh stable manure should not have a supply of Mushrooms at any season of the year, except perhaps during the very hottest period of summer, when they are so often infested with maggots as to be unfit for use. Where short manure or droppings cannot be obtained in sufficient quantities, tree leaves, tan, or long litter may be mixed together to form the foundation of the beds, with about 6 in. or 8 in. of horse droppings on the top for the spawn to work in; I have had very prolific beds made in this way. Given, good spawn and the requisite materials to produce a regular heat, and good Mushrooms may be produced in abundance either in cellar, shed, or in the open air. If grown in a shed there will be a saving of labour for winter work if the shed be artificially heated so that a temperature of 55° or so can be maintained. An underground cellar is a desirable place in which to propagate Mushrooms, either in winter or summer, as the temperature is usually so regular and steady. Wherever grown the temperature of the bed must not be allowed to fall below 55° at any time. Of course the first month after the beds are made, or during the time the spawn is running, if the beds be properly made and of the requisite thickness, a temperature of 75° will easily be maintained. I will just briefly glance at the several ways of preparing the materials for forming the beds. If short horse manure alone be used that from corn-fed horses is the best; after shaking the long straw or litter from it, it should be placed under cover or sheltered from heavy rains in some way, and gently fermented so as to allow some of its rankness to pass off, as well as to reduce the moisture it contains. It should, however, never be permitted to heat violently, and to prevent this it should be turned over every other day for about a week or ten days, well shaking and mixing it together, after which it will be in a fit condition to make up. Another way of preparing the materials, and one that I have often practised, is to add about one barrowful of fresh loamy soil to every five barrowsful of short manure; thoroughly mix the whole together, leave it in a heap for a day or two till it gets warm, then shake it all over again and make up the bed. The fresh soil checks any tendency to strong heat, and this enables the bed to be made up earlier than if of horse-manure alone. It also absorbs the ammonia, that would otherwise be evolved in the frequent turnings and intermixings; beds made in this way are both prolific and lasting; and this is the plan I should recommend any one not well versed in Mushroom culture to adopt, as there is less danger of the beds overheating after being made up. The proportion of soil may vary somewhat, according to the freshness of the manure, for when fresh from the stable, a little more loam may be used. If it has laid in a heap and been partially fermented, less may be added. This detail, however, must in some measure be left to the judgment of the cultivator. As regards thickness or depth of material in the beds, nearly everything will depend upon the position the beds occupy and the season of the year. In all heated buildings 1 ft. in depth will be ample when made thoroughly firm, but for winter beds in an unheated building or in the open air 2 ft. will not be too much, and, in addition, warm coverings of litter will also be necessary. The coverings next the bed should be occasionally changed, as when it becomes damp the spawn may work out of the bed into it and exhaust itself prematurely. In making the beds it is essential that they be constructed firm and solid, as not only does the spawn work better in firm material, but the heat will be more regular and lasting. The best way is to make the bed up in layers, having each layer thoroughly firm before the next is added. Open-air beds are best, constructed in the form of a span-roofed ridge about 3 ft. or so wide and from 2 ft. to 2½ ft. high, made as firm as possible. In summer the beds may be in a trench in a shady place, or in an empty turf-pit, as in hot weather there will be less difficulty in keeping them in an even state as to moisture without saturating them too much with water. When the beds are made, insert a stick about the middle, pushing it down about 1 ft. in the bed; this stick will have to be drawn out and examined daily, and when the heat declines to about 80°, pieces of spawn may be inserted about 9 in. apart all over the bed. The bricks of spawn should be broken up into pieces about the size of a Walnut, or a little larger, and just buried under the surface of the bed, and the bed afterwards trodden or rammed down firmly. If there be no danger of the heat increasing, the bed may at once be soiled, but it is best to wait a day or two to make sure. About 1½ in. of fresh loamy soil should be spread evenly over the surface, and beaten as firmly as possible with the back of a spade; finish off with a light sprinkling of water from a rosed pot, and draw the back of the spade over again to leave a smooth even surface, in order to facilitate the growth of the Mushrooms. The trial-stick should be retained in the bed, and if the heat fall too rapidly, a covering of hay or litter should be placed on it, having previously thrashed the hay in order to dislodge all seeds. The heat can afterwards be easily regulated by occasionally examining the stick, and increasing or reducing the covering, according as the heat varies in the bed. The average time for the appearance of Mushrooms is about six weeks from the time the beds are spawned. Those beds made in autumn usually succeed best, and if several beds can be started in September and October, and earthed up in succession, they would give a continuous supply till the spring is far advanced. In all cases the beds should be spawned when the heat declines to 85° or 80°, as it requires a higher temperature to excite the spawn into growth in its early stages than for the production of Mushrooms. I have already briefly noticed the use of other materials besides stable-manure for the formation of Mushroom beds; and there is no question that good Mushrooms can be grown in anything that will produce and maintain a durable and steady heat. Of course there is no necessity to seek for any material better than stable-manure where it can be obtained in sufficient quantities, but, yet if it be scarce, no one need be afraid to use tree leaves, tan, sawdust (if from green wood), or long litter, either separately or all mixed together, to form the main part of the bed, with a few inches of horse droppings on the top, in which to insert the spawn. Mushroom beds must be carefully watered, and it is always a good plan, even when the beds are warm enough, and the spawn running freely, to keep a thin covering of hay or clean straw on them to check evaporation. Beyond the slightest sprinkling there ought to be no necessity for watering till after the beds come into bearing. If grown in any building above the ground-level syringing the floors and walls occasionally will maintain a moist atmosphere. If in a cellar or any place underground, this even will scarcely be requisite, as in such places there is little or no fluctuation in the temperature or moisture of the atmosphere. After the beds have been bearing some time and show signs of exhaustion is the time to give them the first application of clear liquid manure heated to a temperature of 75° or 80°, which will put new life and vigour into the beds again, and as soon as the watering is finished they should be covered up with long litter or straw, in order to retain the warmth. It often happens in pulling old beds to pieces that enough good spawn can be secured to supply another bed, and this may always be relied upon if covered up and kept dry and used in the course of a week or two.

Vegetable Marrows.

These are plants the culture of which might be profitably extended in small gardens, not only for use as vegetables in summer, but also when fully grown and ripe to form a preserve for tarts and puddings during the winter. Where land is scarce they may be planted near to and trained over the faggot-heap, or up the sides and over the roof of any low building with a favourable aspect. Early in May the places for the hills may be marked out; an open, exposed position is the most suitable for the main crop. A warm corner may produce a few early Marrows, but mildew will attack the plants when hot weather comes, unless the water-supply is unlimited. Open holes for them from 6 ft. to 8 ft. apart, and 3 ft. in diameter by 2 ft. deep; fill up with anything that will ferment, and furnish a slight bottom-heat in which to start them; and that will be sufficiently decomposed when the plants commence bearing and require support, to supply them with food. There is nothing better than the manure from a pig-sty or cow-house, and this may be eked out with weeds, short Grass, or trimmings of any kind that can usually be met with in every garden.

When the holes are filled in level with the surface and made firm, the earth should be formed into a hill with a hollow in the centre, into which the plants or seeds should be set. If there be a frame or pit, the seeds may be sown in small pots about the middle of April, and planted out about the middle of May. It is hardly advisable to sow them in heat, the probable effect of which treatment being to draw the plants up weakly, unless they are removed to a cool frame as soon as they are up. There is a far better prospect of a crop from strong, vigorous young plants raised in a cold frame than from larger plants raised in heat. Where there is no convenience in the way of glass the seeds may be sown on the hills—three seeds to each hill—about the first or second week in May, and an inverted flower-pot placed over them. When the young plants break through, the flower-pots must be removed in the daytime and replaced over them at night until all danger from frost is over, until they become too large to be so covered. There are other simple contrivances that may easily be improvised to shelter in spring not only Vegetable Marrows, but many other subjects requiring protection. When the plants begin to run they should be pegged out, and the strongest shoots occasionally stopped, so as to fill up all vacant spaces. It is an excellent plan to mulch the ground occupied by the Marrows with long littery manure, or anything that will keep the earth cool and moist—which treatment will save labour and materially benefit the crop. In dry weather copious waterings, with occasional supplies of liquid manure, will be very serviceable to the plants; they will add much to their productiveness, and discourage the attacks of mildew. But there will be less necessity for this if the ground can be heavily mulched. The Long White Vegetable Marrow is the best and most profitable kind to grow. When used as a vegetable it is best cut before it gets too large. Later on in the season two or three may be left for preserving for winter use, but the large ones rob the plants more than the same weight of small ones do; therefore they should not be allowed to attain a large size till the plants are very strong and well able to support them.

Tomatoes.

I have a vivid recollection of tasting my first Tomato, and the disagreeable impression which it produced. Many years have elapsed since that event occurred, and I have now acquired taste for Tomatoes either cooked or raw, and no doubt this has been the experience of many besides myself. The difficulty often experienced in inducing Tomatoes to ripen in the open air is a drawback to their culture in small gardens, and this, with the ignorance of cookery so prevalent amongst cottagers, prevents any fresh introduction from having justice done to it, either in the way of proper culture or cooking. In warm countries Tomatoes have a richer, sweeter flavour than with us, and there is a marked superiority in the fruit grown under glass over that produced in the open air. A dish of good, well-ripened Tomatoes is superior, in my opinion, to most of the tropical fruits grown in hothouses, in the way of Bananas or Guavas; of course in this category I do not include Pines. Tomatoes are slowly but surely making their way, and they certainly deserve a place in even the smallest garden. The warmest, sunniest corner should be allotted to them, for although I have proved they will produce and ripen a few fruit in almost any aspect, yet the flavour is inferior compared with that of others ripened in a sunny spot. A very common error in Tomato culture is the practice of cutting off nearly all the foliage under the idea that the fruit ripens better if fully exposed to the sun and the air; those who adopt this theory must suppose that the leaves perform no part in the elaboration of the juices of the fruit, which is, I know, contrary to fact. Tomatoes will ripen and colour without foliage, but the flavour is far inferior to those where the foliage on the main stem is left almost intact. Of course, all young growths should be pinched back after the crop is set and swelling. It is better to be content with a moderate crop of well-matured fruit than to allow quantities of small late fruit to remain on the plants that cannot be brought to perfection. It is better in small gardens, where there is no hot-bed in spring, to grow only early kinds like the Orangefield; but with a hot-bed at work in February all difficulties vanish. Sow the seeds about the end of February or early in March; from a dozen to a score of plants will produce sufficient for a small garden. Sow thinly in a 48-sized pot in light, rich, sandy soil, and place the pot on the hot-bed near the glass. When the young plants are large enough to handle, prick them off either singly into 60-sized pots, or two or three round the sides of 48-sized ones. The soil before being used should be placed in some warm situation to raise its temperature. Under any circumstances never use cold, wet soil for potting off plants from a hot-bed. The young plants should be returned to the hot-bed again to be grown on close to the glass, but not absolutely to touch it. About the end of April shift them to a cold frame, to harden off preparatory to planting out in May, from the middle to the end of the month, according to the earliness or lateness of the situation. If a portion of a low south wall can be obtained, plant them there, and if confined to a single stem, 18 in. apart will be ample space. Should they be stopped early in their growth and two or three breaks encouraged, then more space must be allowed; in any case all young shoots from the main stem, besides the leader, should be rubbed off when ½ in. long. After the development of the first bunch of flowers pinch the leading shoot one leaf or joint beyond the cluster. One shoot from the joint below the cluster of flowers may be encouraged to take the lead, and this will in due course form a second cluster. The side branches, if any, may be treated in the same way, until as much fruit as the plant ought to carry is secured; then all young growths should be regularly pinched off close to the main stems, and no foliage encouraged or allowed, except that on the main stem only; if the clusters of fruit be set thickly, thin so as to give room for development—the thinnings may be used for pickling. If there be no hotbed, delay the sowing till the end of March or beginning of April, place the pot in a sunny window, with a square of glass over it, till the young plants appear, when they should be potted off, and grown on till the middle of May. The seeds may also be sown in the open air, in a warm spot, at the foot of a fence or wall, and the same attention must be given to thinning, pinching, and training, as for the plants forwarded in heat. If there be no wall or fence on which to train them, they should be fastened to stakes, or they will thrive very well planted against espalier rails or wires, and trained up vertically. In the early stages of their growth, a good soaking of water will be beneficial occasionally, if the weather be dry; but mulching may in some measure render this unnecessary. Where, for the sake of economising space, several plants have been grown on in a pot, they should always be divided and planted out separately.

Globe Artichokes.

Although these are not generally grown in small gardens I include them here, as they may be made to serve a double purpose, being both ornamental and useful. A row may be planted to divide the floral from the culinary department, or in some other position that will give due prominence to their ornamental appearance, and at the same time permit of a few dishes of a choice kind of vegetable being obtained. The ignorance of the mode of cooking such vegetables in small households is often the greatest drawback to their introduction, but I hope to add a few plain notes from a most reliable source upon that subject by-and-by. Globe Artichokes will succeed well in any deeply-stirred, well-enriched soil, and they are not nearly so tender as the mode of culture in vogue with our fathers would lead us to expect. A little dry litter or Fern placed round each plant before frost has set in is all the protection they need in most situations; ashes or burnt earth packed round the collars of the plants will answer the same purpose. New plantations are best made from offsets taken from old stools in March or April. If a piece of the old root can be taken off with them they will establish themselves in less time, and some of them may produce a few heads in autumn. Plant in rows 3 ft. apart and every year afterwards until it is necessary to replant, all the weak offsets or shoots that spring up round the sides of the main stems should be removed in spring, as they do not produce any flowers, and only tend to weaken the plants. The undeveloped flowering heads, when getting firm at the base, are the parts usually eaten. The young leaves that usually shoot up towards the end of August are sometimes tied up and blanched like Cardoons. This, however, is not often practised, except

in the case of old plants which it is intended to destroy. All stems from which the heads have been cut should be removed at the same time, as they only tend to exhaust the plants if allowed to remain. There are several varieties, but the kind that finds most favour in English gardens has a dwarf, robust habit, bearing large, globular flower-heads, the points of the scales encircling which are turned inwards and tinged with purple. It is hardly advisable to allow them to occupy one position too long, as they are strong-rooting plants; and when the soil is exhausted they quickly show signs of deterioration, both in the size of their globular flower-heads and in the loss of their perpetual bearing habit; but the latter fault can in some measure be rectified by severely thinning out the flower-stems when they first appear, so as to induce them to throw up a succession. Salt sprinkled amongst the plants during the spring months will be exceedingly beneficial to them. Mulching also, with occasional doses of liquid manure, will encourage the production of very fine heads. E. Hobday.

TREES AND SHRUBS.

NOTES ON SOME NEW TREES AND SHRUBS.

Quercus pannonica.—This is a noble and remarkable Oak, with handsome incised leaves, and one of the quickest-growing Oaks in cultivation. The wood is said to be very enduring and valuable. The timber has been used in the old mines in Hungary for centuries, and without showing decay; as compared with our own Oaks, its growth when young is as two to one. A good specimen is at Riccarton, near Edinburgh, and there is also a good one in the Botanic Gardens there. It is sometimes known as Q. conferta. The black-leaved variety of the common Oak is also a remarkable novelty—darker in hue and foliage than the Purple Beech. Its growth is somewhat slower than that of the common Oak, but withal healthy, and it soon forms a fine bushy tree. A fine contrast with this is afforded by the Lemon-coloured Oak (Q. concordia), a variety of our common Oak, with fine yellowish foliage, free in growth, and constant in character.

Among the Oaks may be named two of great value among deciduous kinds—Quercus nobilis and Q. Daimyo. They have very large leathery leaves, covered with a brownish down when they first unfold, which gives them a distinct character among Oaks. Both seem to be very hardy, and grow vigorously in Scotland.

Lawson's Juniper.—This is a remarkably distinct Himalayan Juniper, with silvery foliage and a conical habit. It grows naturally from 15 ft. to 20 ft. high, in dense, pointed cones, at high elevations. It has proved a hardy and rapid grower in Scotland.

The Yellow Western Arbor-Vitæ.—This (dignified by the Latin name of Thuja occidentalis aurea) is a fine form of a well-known and one of the hardiest of all Conifers. It has a robust growth, an upright habit, and a suffusion of golden colour over the foliage. In autumn it assumes a bronzy hue, and gradually changes to a golden one, retaining this till late in spring. The variegation being of a partial character, it does not decay in parts like the various variegated Conifers in which portions of the shoots are wholly blanched.

Ilex heterophylla magna.—This is one of the finest of all the green-leaved Hollies—strong in growth, and with foliage reminding one of that of a well-grown Bay tree. Of eighty varieties grown in the Lawson Nurseries, this and Ilex balearica nigrescens are perhaps the finest green-leaved kinds. The last-named is a remarkably vigorous and ornamental Holly.

The Slender-twigged Lawson Cypress (C. Lawsoniana filifera).—A graceful variety, quite distinct from the various beautiful forms of the Lawson Cypress, inasmuch as it throws boldly out slender, undivided, drooping branches, to a length of nearly 2 ft. In the second season of their growth these become tasselled at the points, and again throw forth slender branchlets — a peculiarity which will make it one of the most desirable and picturesque of evergreen trees.

The Golden Scotch Fir.—A Scotch Fir, the leaves of which turn yellow in winter and become of the normal green in summer. This kind of variegation is also not likely to dwarf the tree or destroy any of its parts—unlike the total and constant blanching of parts of Conifers, which generally results in the death of the said parts. This form originated at Glenalmond, in Perthshire. Another variety of the same tree has the tip of each leaf of a silvery hue; it is called argentea variegata. This variegation only comes on in winter, and then every leaf has its silvery tip.

The Washington Yew (Taxus baccata Washingtoniana).—A Golden Yew, and thought by many to be the best of all the Golden Yews, because of its strong growth, and because it does not suffer from very bright sunshine in summer. It is different in hue from the old Golden Yew, being of a fine bronzy gold. Newer than this is Taxus adpressa variegata, which is a constantly variegated form of T. adpressa, having a golden suffusion of colour.

The Yellow Alder (Alnus glutinosa aurea).—This proves to be one of the most constant of the golden-leaved deciduous trees. When planted in a moist position and fully exposed to the sun, the colour is very fine.

The Purple Birch (Betula alba purpurea).—A purple-leaved Birch, as well marked in the colour of its foliage as the Purple Beech, but with all the grace of the Silver Birch.

Golden Japanese Box.—This is one of the most hardy and constant of golden-leaved dwarf shrubs, admirably suited for massing with other dwarf shrubs. Like the Golden Yew on the common Yew, it forms a striking object when grafted on the common Box.

The Azorean Portugal Laurel.—This looks quite unlike the common Portugal Laurel, being much open in habit and with larger leaves, and with reddish twigs. The points of the young leaves in spring are reddish in hue and very effective. It is as hardy as the older type. The variety called Ormistonensis has the leaves smaller and more serrated than the older variety, the bush assuming a pyramidal habit; it forms a very pretty variety.

Pyrus americana fastigiata.—This is the best tree among the pinnate-leaved Pyruses, having an elegant pyramidal habit, flowering freely, and producing bunches of bright red berries in autumn.

The Weeping Broom.—This prostrate form of the common Broom, when grafted on stems of the Laburnum from 3 ft. to 4 ft. high, is one of the most striking of flowering shrubs, forming quite a fountain of golden blossoms.

The above have been noted in the fine collection of trees and shrubs in the Lawson Nurseries at Edinburgh, and may be recommended to intending planters.—"Field."

Conifers at Mell's Park.—The following measurements of Conifers in Mell's Park, near Frome, Somerset, taken last April, may be interesting to some of your readers:—Abies Douglasi measured 63 ft. 3 in.; Abies orientalis, 30 ft. 7 in.; Picea cephalonica, 46 ft. 1 in.; P. grandis, 22 ft. 7 in.; P. nobilis, 24 ft. 6 in.; P. Pinsapo, 34 ft. 11 in.; Taxodium sempervirens, 55 ft. 4 in; ditto, 53 ft. 5 in.; Wellingtonia gigantea, 35 ft. 4 in.; ditto, 31 ft. 7 in.; ditto, 31 ft. 6 in.; Pinus insignis, 57 ft. 7 in.; P. Ayacahuite, 36 ft. 6 in.; P. monticola, 55 ft. 11 in.; P. ponderosa, 36 ft. 5 in.; Cupressus macrocarpa, 47 ft. 7 in. These are a few of the largest specimens. To lovers of Conifers a visit to Mell's Park would well repay a journey. The varieties are very numerous, and when time permits I intend this autumn to measure the best specimen of each kind.—G. B., *Longleat.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Purple and Corstorphine Sycamores.—Those who know what a noble tree the often neglected Sycamore makes will be the most likely to value the purple-leaved form, which is a vigorous one, likely to form a magnificent tree. It comes true from seed, and its fine foliage shows the deep tint till it falls. The Corstorphine variety comes out yellow in spring, and returns to a deep green in summer.—V.

The Sweet-scented Laburnum.—This fine form of the common Laburnum should be more frequently grown. Probably many are not aware that there is a variety of Laburnum (Cytisus Laburnum fragrans) with very sweet-scented flowers. Good varieties of ever popular trees like the Laburnum are doubly valuable, as we know they are sure to thrive with us.—J. O

The Winter Berry (Ilex verticillata).—This shrub may be found almost anywhere in North America on the banks of creeks and in moist places. Many of the marshes are ablaze with its masses of fiery berries at this season of the year, and in this section we have nothing to equal it in beauty. Though natural to moist places, we find no difficulty in transplanting it to our grounds, where it seems to flourish as well as in its natural localities.—"Vick's Floral Guide."

Early and Late-flowering Willows.—I have sent you two twigs of Willow—the last and the first of the genus to flower. Salix Epilobium angustifolia (fem.), as will be seen, is just bursting its seed-vessels and dying out; the other, Salix cœrulea, is just showing its silvery buds for next season, whilst this year's leaves are still fresh and green. If no very severe frosts occur, this will form a grand sight throughout the winter, being covered with silvery bloom, which undergoes very little change for eight or ten weeks.—W. Scaling, *Bingford, Notts.*

THE FLOWER GARDEN.

AUTUMN-FLOWERING ROSES.

Roses, in a marked degree, show the effects of the present exceptional season. The unusually protracted cold ungenial weather which we had all through the spring months was as unfavourable as it well could be, especially as regards such Roses as were pruned early; and many of the immense numbers who admire and grow these most popular of flowers predicted that they would be a failure; for even where soil and climate were in every way suitable for them, the first efforts of growth were crippled by cold and the attacks of myriads of aphides and maggots that invariably make their appearance when vegetable life, upon which they prey, is in a languid state. Yet these gloomy forebodings were not correct, for when fine weather set in in earnest, the progress made by Roses was marvellous, and the bloom generally was fine, although, from the intense heat and drought, especially in the southern parts of the kingdom, of shorter duration than usual. The showers we had about the end of August, and the copious rains of September, have caused the Tea varieties in most places to make such an autumn bloom as is rarely seen; the strength of these autumn shoots looks more like spring growth than the results of late efforts which the plants usually make, the flowers being proportionally fine and abundant. Maréchal Niel, so handsome in the half-expanded state, has produced a good sprinkling of blooms; Madame de St. Joseph, Madame Falcot, Isabella Sprunt, Safrano, Belle Lyonnaise, Madame Levet, and that grand old favourite Gloire de Dijon may also be mentioned as flowering freely. The Bourbon Souvenir de Malmaison has been magnificent, producing clusters of flowers six or eight together, like a Noisette; but amongst the whole nothing in this autumn display approaches Gloire de Dijon; where the plants are strong it is literally loaded with buds and flowers.

T. Baines.

Leafless Bamboos.—In visiting certain gardens in this neighbourhood noted for their sub-tropical plants which thrive in the open air, I found some large Bamboos of one particular species, Bambusa edulis, I think, which, instead of being in full leaf with their annual crop of canes fully developed, had, instead of leaves, dense masses of Grass-like flowers, which were, when I saw them, in a dry state, and not a cane from any plant of this species has been produced this year. One of the specimens in question consisted of 100 canes upwards of 20 ft. high, which at their base were about the size of one's two thumbs. Can any of your readers explain this phenomenon, which never occurred to my knowledge before? The plants I find are not dead; on the contrary, they are plump and full of sap.—J. D. M., *Falmouth.*

BEGONIA OCTOPETALA IN A COLD FRAME.

Having grown this singularly distinct variety of Begonia successfully this year, my experience of it may not be uninteresting. In 1874 I procured a strong tuber of it from Messrs. E. G. Henderson & Son, and that year grew it in a pot in the greenhouse. It produced a number of large roundish leaves on stalks about 12 in. in height, but made no attempt at blooming. Last year I gave it a trial under different circumstances, planting it out in a border with other varieties of tuberous Begonias, but with similar results. On raising the tuber I found that it had divided naturally into two good-sized roots. I determined to give it one more trial before discarding this, till then, unsatisfactory variety, and with much success. I have grown it this year in a cold frame, where it commenced to show bloom about the middle of August. This head of bloom, numbering twenty-one blossoms and buds, is borne at the extremity of a thick fleshy stem rising to the height of 2 ft. 8 in. The blossoms, six of which are expanded as I write (Oct. 23), measure from 3¼ in. to 3½ in. in diameter, and are a good ivory white, bearing no trace whatever of the rose-coloured exterior of the petals, as represented so strikingly in the coloured plates of it which have been published. It is quite worth a place in the greenhouse, where its remarkable head of large blooms, resembling the white variety of the Anemone japonica, has attracted the attention and admiration of all who have seen it.

J. T. P.

Hardy Aquatic (Thalia dealbata).

A HARDY MARANTAD.

(THALIA DEALBATA).

This is one of the most stately of all hardy aquatics, and a plant which has long been grown in French gardens, though comparatively unknown in this country. It is quite different from the Cannas, to which it is closely related. It is a native of S. Carolina, and its glaucous foliage and elegant panicles

of purple flowers render it a most desirable plant for cool aquaria or for planting along the margins of shallow ponds or streams in the open air, inasmuch as it has proved quite hardy in sheltered positions in this country. It is readily propagated by division, and well deserves a place wherever aquatic plants of stately habit are appreciated. B.

Castor-oil Plants at Henham Hall.—These are with us at this date (Oct. 20) still in excellent condition: I have just measured several that exceeded 10 ft. in height, and which have leaves within a trifle of 3 ft. in diameter. Few plants in the sub-tropical department are more effective than these, or what is of perhaps equal importance, are more easily grown, for they need no attention in winter. The seed has merely to be sown in a brisk heat in March, and the young plants to be potted on as required, gradually inuring them to a lower temperature as they acquire strength. When planted out they should be placed in beds well prepared for them by deep winter cultivation, giving them plenty of space for free leaf development. The beds should be carpeted with some dwarf-growing plant, and the Castor-oils should be staked securely and watered copiously, when the results are sure to be satisfactory. The pale green-leaved varieties attain the grandest development. But the beautiful bronze-leaved Ricinus Gibsoni should not be left out of even the most limited collections. With us its average height is between 6 ft. and 7 ft., and it has a more branching habit of growth than that of most of the older varieties.—James Groom, *Henham, Suffolk.*

Hollyhocks amongst Rhododendrons.—Of all the herbaceous subjects which we possess for planting immediately in front of evergreen shrubs, so as to have the latter for a background, none surpasses Hollyhocks; not only are the colour and form of their flowers seen to the best advantage when backed up by a dense mass of green foliage, but the erect habit which such plants possess contrasts admirably with the broad, spreading growth of the Rhododendrons. In the Miller Park, Preston, this year considerable numbers of Hollyhocks were used most effectively, interspersed amongst beds of Rhododendrons; the latter stood just so far apart as to allow of the Hollyhocks being grown singly and irregularly amongst them; the beds slope considerably to the sunny side, and when the Hollyhocks were in bloom, nothing could be finer than the effect which they produced without the formality that exists when they are arranged in rows fronting the shrubs. This park, which was given to the town of Preston by the late Mr. Miller, is simply an extension of Avenham Park, to which it is adjoined, and through which it is approached. It is charmingly situated on the south side of the town, bounded by the River Ribble, the waters of which are a few feet below the level of the park; on the north side the ground, densely clothed with trees and shrubs, rises precipitately, on the summit of which are numerous handsome villas. As regards design and general keeping this park reflects the greatest credit on all concerned, and compares most favourably with many similar town inclosures, the half-neglected condition of which, in many cases, is such as to convey the idea that all the resources had been expended in the first construction, and that nothing had been left for future maintenance.—T. Baines.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Large-leaved Saxifrages as Carpet Plants.—These with their fine glossy leaves form an admirable carpet of the larger sorts under thin trees and on banks: even tall hardy flowers might be allowed at times to spring from them The effect of the foliage when seen in broad sheets at this season is very fine; and where the plants flower well on warm soils, the rosy blooms in spring are charming.—V.

Camellias in the Open Air in Kent.—Both red and white Camellias flourish here, grown as ordinary shrubs in the American borders, but flowering as they do early in the season, their blooms get injured by frost, and for this reason they are not so extensively planted as they otherwise would be.—G. Fennell, *Fairlawn, Tonbridge.*

Ipomœa pandurata.—This Ipomœa is one of our handsomest and most profuse-blooming creepers, and is as hardy as a Willow. Its blooms, which are white, with a deep purple eye, are larger than those of the Morning Glory, and are produced on from one to five-flowered peduncles. It is the Mechameck of the North American Indians.—Wm. Falconer, *Cambridge, Mass.*

A New Dahlia.—One of the most distinct of the new Dahlias of 1876 is undoubtedly Turner's Artist, a showy, symmetrical flower nearly 5 in. in diameter, of a clear golden-yellow colour, all the florets or petals, but especially those towards the centre of the flower, being shaded and pencilled with crimson-maroon, while the backs and edges of the smooth and even florets are of a rosy-lilac shade. The extreme tip of each floret is golden, and this, in contrast with the dark crimson-maroon colouring, adds a brightness not generally seen in other varieties of this class of Dahlia.—B.

PLATE XLIV.

WALLICH'S LILY.

(LILIUM WALLICHIANUM.)

This Lily, although introduced twenty years or more ago, was almost unknown in England to cultivators until 1874, when it was re-introduced by Mr. Peter Barr, of King Street, Covent Garden. It is without doubt a noble species, but either the bulbs which have been hitherto received have been too small, or their proper treatment has not been understood, for very few persons have as yet succeeded in flowering it. I saw one plant of it in the open ground at Kew, with a bud 3 in. long, which went off quite suddenly and died; and Mr. Wilson, of Heatherbank, Weybridge, has experienced the same disappointment. It seems to be very late in growth, not commencing unless put into heat until the time when the rains in its native mountains begin, which is in June and July. It then shoots up quickly, and remains green until late in autumn, when it is cut down by frost if out-of-doors. The flower, figured in the "Botanical Magazine," t. 4561, is a fine one, but by no means equal, as I have been informed, to some of the varieties of the plant which bear four or five flowers, and attain 8 ft. in height. If some of the numerous travellers and residents in the Himalayas would only keep a look-out, and send home a few of the largest bulbs which they can find of this plant from different localities, we should soon know more about it. It is said to grow at elevations from 3000 ft. to 5000 ft., and to flower in August. I have quite recently received a fine specimen of this plant in bloom from the New Plant and Bulb Company, Colchester, which has been drawn by Mr. Fitch. The stem is 3 ft. or 4 ft. high, and the flower about 7½ in. long, of a creamy-white colour. The petals are not strictly regular, the lower three being somewhat inclined downwards like those of a Gladiolus, though not to the same extent. This feature I have seen in no other Lily, and it is not safe to judge from one specimen only whether it is the normal character of the plant or not. Other Indian Lilies known to us are L. nepalense; L. neilgherrense, a noble species, which, until two years ago, was almost as little known as L. nepalense, but which has now been introduced, and has flowered in several places; L. oxypetalum, a little plant, described originally as a Fritillary by Royle, and not known in a living state in Europe; L. polyphyllum, a species grown for some years at the Botanic Gardens, Edinburgh, as Fritillaria polyphylla, but one which has not been much heard of until recently, when it was introduced by Mr. Barr; and L. giganteum, of which a coloured plate was given in The Garden (see Vol. VIII., p. 504). Besides these six species I know of no other Lilies in India at present; the plant grown as Lilium roseum or Thompsonianum is no true Lily. I have, however, been told of a species growing between Nunklow and Nungermai, in the Khasia Hills, which is quite different from any known species, being of an orange colour, and resembling L. croceum in habit. I shall hope that some visitor to the Khasias will look for this and send it home. There must also be in the vast countries of Nepaul and Bhotan, as well as in the unexplored mountains round the Upper Assam valley, several species, as well as a multitude of other fine plants, but as long as—owing to the timid and unenterprising policy of the Indian Government—travellers are not only not encouraged, but absolutely prevented from attempting to explore these countries, we are likely to remain ignorant of their vast vegetable and animal wealth. J. Elwes.

Miserdine House, Cirencester.

Autumn Crocuses.—The exquisite Crocus speciosus now in flower is one of the prettiest gems of autumn. Although the blooms are of short duration this deficiency is fully compensated by the quick succession with which they follow each other from well-established clumps of bulbs. It is an undoubted drawback that the flowers have no foliage, and probably to this fact is due the short duration of the blossoms. If over the clumps and bulbs were planted patches of some of the carpet Sedums, so that the flowers might come through them and expand over a bright green ground, a charming effect would be produced. In the same way if these autumn Crocuses were grown in pots in the house, Sedums or green Moss would furnish a pleasant coating for the soil.—D.

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The Garden

WALLICH'S LILY. (LILIUM WALLICHIANUM.)

MY DIARY FOR SEVEN YEARS.

By W. DENNING.

October 30.—*Sowing*—200 pots of French Beans. *Potting*—Lily of the Valley and Hoteia (Spiræa) japonica. *Miscellaneous*—Planting Ivy about Fernery; Hyacinths and Tulips amongst annuals; and making up failures in Lettuce beds; moving Pelargoniums from frames into houses; getting a dozen Hamburgh and two Muscat Vines into first pot Vine pit; putting glass protectors over Intermediate Stocks; placing Roman Hyacinths and Roman Narcissi in heat weekly; putting all cuttings from frames into Vineries; getting Mignonette into pits as fast as possible in order to get frames at liberty for Lettuce; sending in Damsons; also Keswick Codlin Apples for jelly; manuring and digging about Standard Roses; filling bins with soil in potting-shed; turning some long manure and watering it to sweeten it so as to be ready for hotbeds for Seakale and Rhubarb; making a new slab-pit, consisting of a double row of slabs to form a cavity in which to put ashes; digging vacant ground; putting protection round Calceolaria pit; picking off male blossoms from Cucumber plants; hoeing among Coleworts; splendid lot of Beans on first crop in pots; starting first Hamburgh-house, main range, at 65° at night, syringing four times or oftener every day; raising temperature of French Beans to 63° at night and 68° by day, fire-heat; Dahlias, Heliotropes, Perillas, and all bedding plants killed by frost.

Oct. 31.—Taking up Gladioli; putting a few of the earliest Cinerarias into heat; pruning and nailing Morello Cherries; cleaning inside of tree guards in pleasure ground; getting all Pea stakes pulled up and put away.

November 1.—Filling up blanks in Cabbage plantations; taking up and replanting some young Cherries in order to check over-luxuriance and induce them to fruit; getting up Dahlias, the tops of which are all killed. *Miscellaneous*—Rearranging conservatory; moving an Araucaria imbricata; finishing nailing of trees on north walls; taking up Endive and putting it in orchard-house; stacking Carrots and Beetroot; giving winter Cucumbers 1 in. of top-dressing; emptying first Asparagus pit; examining all young Pelargoniums in pits, and clearing them of dead leaves and flower-stalks.

Nov. 2.—*Planting* three frames with Violets; also Cauliflowers under hand-glasses. *Miscellaneous*—Staking all Mignonette; nailing in Tea Roses on East Indian Orchid-house wall; putting Gladioli into Vinery or other dry place; placing a second layer of manure on Mushroom bed; emptying out leaves from Fig-house plunging bed; pruning and nailing Cotoneasters; hoeing and earthing-up Cabbage.

Nov. 3.—*Potting*—500 plants of Schizostylis coccinea; rearranging Dendrobium-house. *Miscellaneous*—Shifting herbaceous Calceolarias into 6-in. pots; turfing round Roses after having manured them; taking up stock plants of Balm, Catmint, and Blue Salvia; sending in Louise Bonne of Jersey and Moorfowl Egg Pears; getting fresh leaves into Fig-house; watering manure that is wanted for early Vinery inside border; cleaning and pruning Peach trees, and otherwise getting first house ready for starting; hoeing between autumn Onions and Spinach; rough-raking flower borders.

Nov. 4.—Saving some seed from the best varieties of Balsam and Celosia. *Sowing*—Cucumbers for February. *Potting*—Some Roses in two parts good loam and one part manure. *Miscellaneous*—Taking up Hollyhocks; putting Achimenes under the pipes in Vinery; Snow's winter White Broccoli ready for cutting; pulling up all bedding plants; cutting dead wood out of Yew trees. *Plants in flower*—Scented-leaved, scarlet, and pink Pelargoniums, Mignonette, Stocks, Heliotropes, Scutellarias, Amaranthus, Narcissus, Chrysanthemums, Schizostylis, scented Verbenas, Justicias, Pentas, Primulas, Coleuses, Fuchsias, and Plumbago.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Pits and Frames.—These, being cleared from Melons and Cucumbers, will now be available for other purposes. Mignonette that has been grown in pots for flowering through the winter, and also that which was sown later to come in during the spring, and which has been placed in the open air, will now need protection. As it is no longer safe from frost out-of-doors, it should be removed to frames, where it will be secure for some weeks to come, as we have not usually more frost before Christmas than can be kept out with an ordinary covering of mats. For all such purposes the frames should stand on a good bed of ashes in as dry a condition as can be had, which will tend in some measure to counteract the effects of the damp state of the atmosphere from which we generally suffer in the last months of the year. Place the frames in the lightest situation available, and let the Mignonette stand on inverted pots sufficiently large to raise the tops of the plants close up to the glass, by which means they will be in a position to admit of a free circulation of air amongst them as well as to receive all the light possible. Stocks grown in pots for blooming in the spring ought to be treated in a similar manner. Take the lights completely off during the whole of each day when there is no rain, and tilt them back and front when it is wet, the object being to keep the growth now made as stout and compact as possible, upon which in a great measure will depend the quantity and quality of the flowers which the plants will produce. There is a double advantage in keeping Mignonette in frames through the autumn as late as it can be done without suffering from cold or damp, inasmuch as treated in that way it is less liable to get drawn up weakly than in a greenhouse, and it prevents houses from getting so much crowded as they otherwise would be. Do not over-water; at the same time the plants must not be allowed to get over-dry; give liquid manure with a little soot in it every other time water is required; the soot will give a deep green colour to the leaves in place of the yellow, sickly hue so often seen in the case of Mignonette grown in pots. Above all, avoid having too many plants in a pot, or a weakly condition, with little flower, is certain to be the result; two, or at most three, are enough for a 6-in. pot. Many other plants not liable to damp, such as Cytisus racemosus, Myrtles, Oleanders, and Campanulas, can be kept in frames and cold pits until near the close of the year, by which time Chrysanthemums, that until then take up a very considerable space in greenhouses, will mostly be out of flower, and make room for subjects that have been grown in frames.

Roses in Pots of the Tea varieties that have been prepared for late autumn-flowering as recommended through the spring and summer, will by this time have made good growth, the extremities of the young shoots being set with a number of buds in different stages of development. The plants should, before being taken in, have their pots well washed, and if there be the slightest trace of aphides, red spider, or thrips, about them, they ought to be thoroughly syringed with Gishurst Compound, at a strength of 2 oz. to the gallon; this will be better for the purpose than anything else, for it will not only destroy the above insects, but mildew as well, and at this strength will not injure either the leaves or the young buds. After the plants have been washed in this way, and the mixture allowed to remain upon them for half-an-hour, they should be well syringed with clean water to free the leaves from the white sediment left by the Gishurst. It is a good plan to prepare the solution two or three days before it is applied, as in this way it leaves much less sediment upon whatever it is used. Tea Roses are far the best for autumn-blooming managed in the way above described, as not only are the flowers finer according to their respective kinds than can be had from any other description of Roses, but they give a succession that no other varieties will afford; the blooms cannot be expected to attain the size they will in spring and summer, but in the half-open bud state they are invaluable for making up into bouquets, button-hole flowers, or for filling small vases; the prices they fetch in Covent Garden Market, late or early in the season, are sufficient evidence of the estimation in which they are held.

Kitchen Garden.—Beet should at once be lifted, as it will not bear much frost; choose the early part of a fine day for the operation, and let the roots remain for some hours on the surface in order that they may be the more readily cleared from any soil that may have stuck to them. The retention of the fine, deep colour so much esteemed in Beet when cooked to a great extent depends upon the roots not being broken or bruised when taken up; where injured, even ever so little, the sap which gives the colour escapes, and in place of the dark crimson which good Beet should have, it assumes an unsightly grey colour. In storing Beet, it should be placed in layers intermixed with coal ashes, for if simply put in a heap in an ordinary building, it becomes soft, and the quality deteriorates. Parsnips are much better left in the ground and lifted as required than taken up and stored; but as many as are likely to be wanted should be lifted before severe frost sets in. Refuse vegetables should be removed to the rubbish-heap, as should also all weeds, and the whole should have a good sprinkling of powdered lime or, if it can be had, a twentieth part of gas-lime; this will not only destroy slugs and their eggs, but also act as a fertilizer. After carefully noting for a number of years the effects of gas-lime on land, I am prepared to state that for old gardens, especially where heavy dressings of ordinary manure have been given, nothing that can be applied will be found so generally efficacious as gas-lime, and in land of a heavy character its manurial properties are much greater than the evidence of chemists would lead us to suppose, particularly when laid on in a perfectly fresh state; but amateurs who have had no experience with this lime must be careful not to employ it in too large quantities, and it should never be dug into the ground in a crude state; on

the contrary, it ought to lie for some weeks spread on the surface, so as to be fully exposed to the action of the air. Now is a good time to apply it, and the best way to proceed is to first dig, ridge, or trench the ground according to its character or requirements, and to then spread the lime upon the top; a good wheelbarrow full—say 1½ cwt.—will be enough for 3 perches or 4 perches of ground. It is now advisable to look well ahead in respect to vegetable crops that are intended to stand the winter, as there never was a season in which they were in a more tender, insufficiently matured state to enable them to bear a keen frost. During summer, at the time when Broccoli, Cabbages, Coleworts, and Celery, ordinarily make their growth, the plants could barely exist, and made little progress, even where mulching and watering were fairly attended to; growth only really commenced in September, at the time when the solidifying maturing process usually begins, and the continued wet, sultry weather which we have had during the present month has still further contributed to this state of matters. Winter and spring Broccoli should therefore be laid forthwith, so as to check the growth and give the different crops of these a chance of attaining a hardier condition; where grown in damp, retentive soils it will be better to take them wholly up, and put them in a drier situation; they should be laid in a slanting position with their heads facing the north, treading the soil, which should cover the whole of the stem right up to the bottom leaves, moderately firm to them. Do not lay them too closely together; on the contrary, the more light and air they get the better. Where the plants are only just heeled over where they have grown, if planted at all close, it will now be better to thin some out, putting them in a separate place. In order to prolong the supply of Broccoli in spring it is a good plan to grow a portion of the latest kind on the north side of a wall, but where this cannot be done a portion of the latest may at all events be laid in such a situation in which during very severe winters it usually stands best, owing to its being less exposed to the sun when hard frozen. Continue to thin out winter Spinach; if the thinnings cannot be used as fast as the crop requires more space, the plants that are drawn out should be consigned to the rubbish-heap, as overcrowding thus late in the season will prevent those that are to remain attaining a condition to enable them to survive severe weather. The principal crops of Celery for winter use should now have the earthing-up process completed, drawing the soil well up to the leaves, so as to form at top a sharp ridge, by which means water will be thrown off. In damp situations it is no uncommon occurrence during wet weather to see water standing in the spaces betwixt the rows; means should always be taken to admit of its running off, otherwise it is almost certain to cause the crop to rot. Late Potatoes have suffered from disease, and should be carefully looked over two or three times in the course of a few weeks, so as to remove those that are affected. Late-sown Turnips have grown very fast; the wet has also had the effect of causing the tops to grow larger than usual, and if at all crowded, these will interfere with the roots increasing in size as they ought to do; as they will yet grow considerably if space be allowed them, more should be thinned out.

Apples and Pears.—Late varieties of these, in common with everything else, are unusually late this year, and in many places where they were gathered at the ordinary time they are shrivelling considerably; where this is the case, I should recommend their being covered with clean Wheat straw; this will to some extent prevent evaporation, and check the mischief. In the northern districts, the latest kinds not yet gathered should be got in, as even on walls they will be little further benefited by being allowed to hang on the trees after the leaves have begun to lose colour.

Stove Plants.

Poinsettias.—In order to assist these to push large and brilliant floral leaves, and to obtain them of stout, firm texture for cutting or other decorative purposes, the plants should now be placed in gentle bottom-heat with their heads as close to the glass as possible without actually touching it. Should they, however, be required for removal to assist in furnishing the conservatory, it will be better to avoid the bottom-heat, as they retain their lower leaves much fresher, and are far more enduring when they have to remain in a low temperature. Liquid manure, if used in a tepid state (by the addition of warm water), will now be of the greatest assistance in increasing the size of the flower-heads, and imparting a brighter and richer colour to them.

Eucharis amazonica, always so valuable for cutting, is doubly so during the dull months of winter, when its pure white flowers show up in such pleasing contrast with the beautiful Euphorbia jacquiniæflora, and the rich, glowing scarlet of the Poinsettia. In order to have it successfully in bloom at the present time, it is necessary that a portion of the stock should have been rested by having been placed in a cooler temperature without bottom-heat, with only just sufficient water at the roots to keep the leaves in a fresh, green state. If this mode of treatment have been carried out for the requisite period, there will be no difficulty in inducing them to flower if at once placed in brisk bottom-heat, and well supplied with water at the roots. If the drainage be free and open, and the soil in the same condition, there need be no fear of over-saturating them with water, as they will take and enjoy more than most plants, especially after they have been a week or two in strong heat, and their roots thereby urged into a state of activity. Before starting them see that they are entirely free from bug, and give the leaves a thorough sponging to clear them of any dust or deposit of any kind that may have collected on them. Eucharis have a special liking for being watered overhead as well as at the roots; and therefore if the atmosphere in which they are placed be at all dry, they should be frequently syringed, always using clear warm water for the purpose. Any that have ceased blooming, and have become thick and crowded with bulbs, should be shaken out and divided, and the small and medium-sized plants laid aside to grow on by themselves, while the largest and best should be potted in large pots, putting from twelve to eighteen bulbs in each according to the sizes used.

Euphorbia jacquiniæflora, than which a more charming or useful winter-flowering stove plant does not exist, should now have every attention paid it to make the growth firm and mature, without which they never flower in a satisfactory manner. Where they are required for cutting it is a good plan to place them along the front of a cool stove, with their heads kept down by straining a few pieces of twine under the rafter, by which means the whole of the stems of the plant will then be within a few inches of the glass, in which position they will derive full benefit of all the light it is possible for them to receive at this season. Flowers that are produced under such favourable conditions last in a cut state nearly twice as long as those that are allowed to expand far away from the light and air, and where they have to endure the same amount of heat and moisture necessary for the general stock.

Plumbago rosea.—No plant shows the want of the above kind of treatment more than the lovely Plumbago rosea, which, unless grown close up to the glass in a moderately cool temperature, is comparatively worthless as regards its use for cutting or removal to rooms for general decorative purposes, but when so treated it is one of the most useful winter-blooming plants in existence. As they will soon be showing flower, where any are in strong, moist heat, or are far away from the light, they should at once be removed and placed on shelves or other positions where they can have their heads close up to the glass and receive air on all favourable occasions.

Justicia flavicoma.—Choice yellow flowers are scarce at all seasons, and particularly during the winter, and nothing is more valuable or affords a better contrast with the above bright colours than the old Justicia flavicoma, a plant not nearly so frequently met with as its merits deserve. It requires free cultivation during the summer and autumn months so as to get it strong and bushy, when every shoot will produce fine heads of its delicately soft, lemon-coloured flowers, that last a long time in great beauty, and show to so much advantage backed up by pleasing, glossy green foliage. Cytanthera magnifica, closely allied to the Justicias, is another most useful plant, that may be had in bloom almost at any season by preparing stock in successional stages. Any required for winter blooming should now be grown freely on by shifting them into rich soil and giving them a little bottom-heat to get their roots in a state of activity.

Amaryllises.—At no season of the year are these gorgeously beautiful flowers so useful as they are in the depth of winter, and where any strong bulbs have been grown and rested as recommended in previous calendars, a portion should now be started where they can be accommodated with a good brisk bottom-heat. No place suits these better than the front part of a stove, where the pots in which they are growing can rest immediately above a hot-water pipe, as the strong, dry heat just suits the sappy nature of the bulbs and their large, fleshy roots. Till these assume active growth, and the leaves begin to emerge, water must be given but sparingly; but whenever it is administered it should be in sufficient quantity to thoroughly soak the whole of the soil. These, like most other bulbous plants, seldom receive proper treatment after the blooming period is over, but are frequently thrust away to make room for others, instead of being grown on and well cared for till they have formed fresh flower-buds before the foliage is allowed to die off, and the plants go gradually to rest. In growing bulbous plants of whatever description, it should be borne in mind that the flower-bud has to be formed before the loss of the foliage, and if not then, it cannot be produced till a fresh growth has taken place.

Perpetual Carnations, so useful for winter-blooming, should now be got under cover, and placed where they can be fully exposed to the light, and have plenty of air to keep them from drawing. A dry pit, where they can be plunged in a bed of gently-fermenting leaves, suits them well, or a light house that can be kept at a temperature ranging from 45° to 55°, will meet their requirements, and cause them to emit blooms with great freedom. Stake and tie as they require support, and whenever dry, water with liquid manure made from soot and sheep-droppings, which will impart a healthy green colour to the foliage, and rid the soil of worms should they have effected an entry.

Heliotropes that have been kept in pots during the summer for early blooming, should now be placed on shelves close up to the glass, so that they may receive all the sun and light possible, or be placed in a dry, warm pit, where they can enjoy the same advantages. For late blooming, plants taken up from the flower garden, cut back, and potted in small pots, and afterwards placed in heat to grow them on again, make fine plants by March or April, when they are most useful for cutting or conservatory decoration, for either of which purpose they are always highly prized.

Passifloras, Thunbergias, and other summer-blooming varieties of stove climbers that are growing up rafters, should now be thinned out and well shortened back, in order to admit plenty of light and air to the plants beneath; as the foliage will be considerably reduced by the operation, and their season of rest having arrived, very little, if any, water will be required at the roots for the next two or three months, unless they should happen to be in pots or very confined spaces, in which case a little may occasionally be given. Stephanotis, Clerodendrons, Allamandas, and others of a like character, trained on trellises, should now be loosened and attached to cords or wires strained near the glass, so as to get the wood well up to the light, by which means its thorough ripening will be insured. To aid in this, keep them as dry at the roots as the safety of the plants will permit. There is something in the bark or sap of Clerodendrons and Allamandas that is obnoxious to mealy bug, as they seldom, if ever, make their appearance on them, but they are unfortunately very fond of the Stephanotis, and attack it with the most provoking persistency. With the young growth, and other parts in the firm state they now are, an excellent and safe opportunity occurs while handling them to get them off their trellises, to lay siege to this worst of all insect-pests, which may now be done in a most successful manner, as the plants will endure a much stronger dose of insecticide while resting than at any other time. Abyssinia mixture, used at the rate of 6 oz. or 8 oz. to the gallon of soft water, and syringed on at a temperature of 100°, is the best remedy to apply at this season, and after that the plants should be thoroughly cleaned by the use of sponge and brush, so as to remove every vestige of bug that may be lodging about them. When taking work of this sort in hand, it is best to devote a day or two, or as long as may be required to go through the whole collection, as thereby time and labour will be economised, and much unnecessary waste of solution in syringing saved. It is only by the utmost watchfulness and perseverance while plants are resting that this troublesome enemy can be got rid of, or even kept down sufficiently not to interfere with the growth or healthy appearance of these beautiful plants. Mealy bug may often be found attaching itself to the stakes and ties on which the plants are supported, and, therefore, in removing these they should be burned or destroyed, and not dropped about.

Caladiums, Gloxinias, and Achimenes should be gradually dried off, and as soon as the foliage is ripe, their leaves or stems should be removed, and the pots stored away on spare parts of the stage at the back of stoves or other warm houses where the temperature does not fall much below 55°. It is the practice with some growers of these to shake them out of the soil, and store them in dry sand, but they never winter so satisfactorily as when allowed to remain in the pots in which they were grown without any disturbance. Others again keep Caladiums growing by giving them water occasionally, but they cannot be expected to start with the vigour they would were they treated more in accordance with their nature. Such plants as Prince Albert Edward and others that partake of the character of Alocasias by having thicker stems and leaves than most of the Caladiums, may not be entirely dried off, as they can have thorough rest enforced on them by only just giving sufficient water to keep their leaves alive.

Billbergias.—The beautiful B. Moreliana, and other varieties of these will soon be showing flower, and due care should be exercised in the use of the syringe not to fill their crowns with water, or the blooms will rot before they emerge. Where any doubt exists as to these or other plants of similar character being in this condition, they should be occasionally turned upside down in order that the water may drain out.—J. Sheppard, *Woolverstone Park.*

Orchids.

At this season the lovely terrestrial Orchid, Disa grandiflora, begins to make its growth a process continued slowly throughout the winter. Plants of it which have been up to the present time in a cool, shady pit, should now be removed into some airy situation in a cold greenhouse. Some place this plant in heat during winter, thinking thereby to assist it in making its growth, but such treatment is positively injurious to it. The cooler it is kept in reason the better, and the slower its growth throughout the winter the fitter will it be to push out vigorous growth in spring. Disas should never be allowed to get quite dry; on the contrary, they must be carefully watered until February, when they should be re-potted, and as soon as they are re-established they should be liberally supplied with water, rain-water being the best for them. Whilst making their growth they are very liable to the attacks of a kind of red thrips which is peculiar to them; they must therefore be carefully watched in order to detect the first signs of these little insects, which may be destroyed by sponging frequently with weak Tobacco-water. Wherever these thrips are found, it is of the greatest importance that they should be destroyed, for it is a rare thing for a Disa on which they have been allowed to remain unmolested to flower. The fine, large, blue-flowered Disa Herscheli, many plants of which are now in the country, succeeds well under the same treatment as D. grandiflora, and is equally well worth growing, as is also D. longicornu, both of which, when better known, will be eagerly sought after by lovers of this class of plants. Cypripedium spectabile and other hardy Lady's Slippers, when grown in pots, should be wintered in a cold pit, air being given them even in the coldest weather, provided the atmosphere is clear; although capable of withstanding the cold of ordinary winters, the constant changes, and the frequent fogs to which they are subjected, are unfavourable to them when grown in pots and left in the open air. The same applies to our British and other hardy European Orchids, the culture of which is on the increase. Those who have not the convenience for wintering these plants under a frame should plunge their pots in Cocoa-nut fibre under a wall or in some other sheltered place, covering their crowns with 1½ in. of the same material; thus treated Cypripediums and also other hardy Orchids will be much safer and more likely to grow and flower well than if they were placed in a house heated by artificial means. Hardy Orchids, planted in the rockery or open garden will be benefited by having 2 in. of dry leaves placed over their crowns before frost sets in; and at the same time, if there be the slightest probability of their being disturbed during the winter or spring, cleaning up the situation of each plant should be marked by a stout peg, on which its name should be written. Rods with the bark on, cut into lengths and pointed at one end, are the best for this purpose, as they are not so conspicuous as those made of deal.—James O'Brien.

Successful Culture of Todea superba.—The finest collection of noble specimens of this plant in cultivation is in the Lawson Nurseries at Edinburgh, the house in which they are grown affording one of the most interesting sights, in many respects, in that remarkable establishment. The graceful plumes of the huge Todeas, each dissected like the most delicate of filmy Ferns, fill a large glass-house, so that in passing down the central passage one seems to be in a meadow of this Fern, the finest of its race—the peculiar charm of which arises from the bold sweep of the fronds, combined with the lace-like dissection of the parts. It looks as if each little nervelet in the stately fronds had determined to make a small leaflet of its own, and, as all could not find room to spread them out flat, so myriads hold their little blades erect. Where the culture of a plant so generally admired as this, is so successful, a few words on the subject may be of interest. The main point to notice is, that no fire heat is employed. Winter or summer is all the same in this respect, no frost that has occurred for several years past injuring the plants in the least, though sometimes the frost is very severe (20° below freezing point) in the house. In the next place, very little or no direct air is given, except in the very hottest weather. Potted in peat, loam, or Sphagnum, there is abundant drainage given to carry off the abundant waterings. In the growing season, and throughout the summer, the plants are watered overhead three times daily. At present they are watered overhead once daily. In mid-winter they are at rest, and receive no water for ten weeks or thereabouts. Mats shade them from direct sunlight. So treated they grow as freely as could be desired, and are a fine example of successful culture.—V.

Red Wall Roses.—What are the best kinds of red Roses to plant as climbers against a house?—Rose E. Kingsley, *Byfleet, Weybridge.* [Noisette Fellenberg, Boursault Amadis or Crimson, Cramoisie supérieure, Pink Climber, and Hybrid Chinese Blairi No. 2, will answer your purpose.]

THE KITCHEN GARDEN.

LEEKS AND THEIR CULTURE.

The Leek (Allium Porrum) seldom receives in English gardens the attention which it deserves, nor does it hold that place in English household economy to which its nutritive properties and savoury qualities so justly entitle it. In olden times the whole of the Onion tribe were held in much higher estimation as articles of diet than they are at the present day. Doubtless many have wondered why it is so pointedly recorded in Scripture history that the Israelites in the Wilderness murmured at the loss of the Onions, Leeks, Garlic, Cucumbers, and Melons, of which they had been accustomed to partake as food when they were under the Egyptian yoke. Herodotus, an eminent Greek historian, relates that the large sum of 1600 talents was spent in Garlic alone for the supply of the labourers employed in building the Pyramids of Egypt; and it is probable that as much, or even a larger amount, was disbursed for Leeks. The Alliaceous plants of Egypt and other eastern countries are far superior in flavour to those grown in colder latitudes—they are sweeter, milder, less pungent, and more nutritious. According to Hasselquist the Egyptian Onion was held in general estimation on account of its various good qualities; and doubtless the same peculiarities of soil, climate, and culture that produced it in such perfection gave the Leek also its special excellence. "Whoever," he exclaims, "has tasted Onions in Egypt must allow that they are not excelled in any other part of the universe. Here they are sweet—in other countries they are nauseous and strong; here they are soft—whereas those grown in the North of Europe are hard, and their coats are so compact that they are difficult of digestion. Hence they cannot be eaten anywhere with less prejudice and more satisfaction than in Egypt."

It is well known, even in Europe, that there are Onions *and* Onions, and that those grown in Spain and Portugal are milder in flavour than those raised in England; there is also a great variation in the quality of Leeks. These two members of the same family (the Onion and the Leek) have also one characteristic in common, viz., the larger in size the milder in flavour: they differ, however, in this—that whereas the Onion flourishes best in a warm climate, Leeks are finer in size, and more extensively consumed in the temperate zone, from which it may be fairly assumed that they are really superior in quality to those produced in the South of Europe; it may be stated, at least, as a fact, that Leeks are more generally grown in Scotland and Wales than in England. The Leek is the national emblem of the Welsh, of many of whom it has been reported that they fill their gardens with Leeks, with the exception of a small piece left for Garlic and Onions; while if one travel to the North of the Tweed, and through the Highlands of Scotland, the partiality of the inhabitants for Leeks and Onions will be specially manifested.

Stimulated by local shows and by the growing demand for large Leeks, the culture of these useful vegetables has arrived at great perfection in different parts of this country; in fact, they have often been grown and shown with the blanched portion as large in circumference and as long as a medium-sized head of Celery, say about 1 ft. in length and 1½ lb. in weight. Leek shows are as popular in the North of England as those of Celery and Gooseberries in the Midland Counties, and Grapes in the South; and the artisan or tradesman is as proud of his monster Leeks as the Grape grower is of his 26-lb. bunches of Grapes. The firm, solid, milk-white stems of this vegetable when stewed are much relished with roast meat, while "cock-a-leekie"—which is made by simmering a fowl and Leeks together for some hours until they are melting and tender—is a dish much esteemed in Scotland; and boiled whole in ordinary soup and served as a vegetable, or shredded down into the mass, the Leeks give a savour that neither Onions, Garlic, nor Shallots can equal; indeed, there is no reason why stewed Leeks should not be as well known on the table as mashed Turnips or boiled Carrots. All who can eat Onions may eat Leeks in greater abundance, for they are milder than the Spanish Onion, easier of digestion, and perhaps more nutritious.

There are several kinds of Leeks, as the St. David's, Musselburgh, London Flag, Ayton Castle Giant, Large Rouen, and others, all garden selections from the original species—Allium Porrum, and perhaps A. sativum and A. lineare, either of which will develop into fine Leeks if well cultivated. There are few plants that pay better for liberal treatment, or sooner resent neglect in any shape, than Leeks. The soil in which it is intended to grow them should be lighter than that in which Onions are generally cultivated, and they thrive best in alluvial deposits of rich black earth thoroughly impregnated with decomposed manure. What is known as rank manure is not at all suitable.

The best mode of preparation for Leeks is to dig or trench the ground early in autumn, covering it with a heavy coating of manure, and leaving it as rough as possible during winter to mellow the surface and assist in the perfect decomposition of the manure. About the middle of February sow the seeds either in rows at distances of 1 ft., 1½ ft., or even 2 ft. apart (according to the richness of the soil, the mode of culture to be adopted, or the size to which the produce is expected to grow), or in a seed-bed of rich soil. The seeds should be covered with about ½ in. of soil, and the surface finished in the same way as for Onions. Sow again in March, April, and even May, for successional crops; these latter sowings should be in drills from 12 in. to 15 in. apart, and the plants should remain where sown to come in during the winter and spring months. Where a constant supply of Leeks is required successional sowings are necessary, for the first-sown will grow under liberal treatment to a large size, and are not so hardy as those of a smaller size and later growth; all that is requisite to be done is to thin them to the extent of from 6 in. to 12 in. apart in the rows and to keep them clear from weeds throughout the summer; those sown in March might also be earthed up with about 4 in. of earth on either side of the stems before winter sets in. The success of the crop is mainly dependent upon the manner of sowing the seed, which operation should be performed thinly, whether in drills or broadcast on a seed-bed, in order that the plants may not be weakened, for thousands of plants are crippled and damaged for life by overcrowding in nursery beds and lines, which no subsequent attention can repair; consequently on the heels of thin sowing severe and prompt thinnings must follow, which thinnings may be planted in either of the ways described further on. But I will first deal with rows planted so widely apart as to be left till the Leeks have attained their full size where sown. As soon as the crop is thinned to about 1 ft. from plant to plant, hoe the ground well to clear the surface of seed weeds; within a week, draw some loose sweet earth up so as nearly to touch the Leeks on either side, and leave a small ridge 1 in. or 2 in. from the plants, which will then stand in a small drill. Hoe the level surface again, and as the Leeks grow, draw a fresh supply of fine, sweet soil to increase the size of the ridge, and so proceed throughout the season. As they develop in size of top and number of roots, sprinkle a little guano on the surface before each earthing up, and flood it occasionally with guano-water or house or yard sewage, for the Leek is a moisture-loving plant with a superabundance of roots, and should never be allowed to become dry; if the plants receive such stimulating and nourishing treatment as that just mentioned, they will make extraordinary progress. After August the earth may be drawn up quite close to the stems on either side, forming a ridge from about 1 ft. to 1½ ft. in height, which will have the effect of blanching the stems to that height, and will insure that whiteness, solidity, and mildness which are the chief recommendations of a perfect Leek.

Another mode of growing fine Leeks is to form trenches for them in the same way as for Celery, though not so wide—9 in. or 12 in. being quite sufficient. Fill each trench at the bottom with about 6 in. of well-rotted, rich, light manure; surface this with a few inches of soil, and leave the top from 6 in. to 12 in. deep. Plant the Leeks out of the seed drills or beds into the trench in dull, showery weather, taking care to preserve all their roots. This will be found a most convenient method to allow of the easy application of water and manure; see that the plants are kept clear of weeds. As they advance in growth fill in the earth a little at a time; this will refresh and stimulate the plants. By the end of the season the trench

will be level with the surface or probably converted into a slight ridge on either side of the Leeks, which will be from 12 in. to 18 in. long, thoroughly blanched, and of the finest quality. Leeks are sometimes planted with a dibble in newly-dug, highly-manured ground in the same way as Cauliflowers or Cabbage plants, and simply left to shift for themselves.

Another method of planting is that adopted for setting Potatoes with spade and line. The ground is dug and manured in the autumn, and again dug early in April. When 1 ft. or more is dug set the line against the work and cut it down straight with the spade; then plant the Leeks carefully against the straight cut along the face of the dug ground, spreading out the roots and covering them with some of the fine soil already cut down; dig another foot of ground—taking care not to bury the Leeks too deeply—and proceed to plant another row, and so on until all are completed; by this mode the plants will have a fresh, soft, untrodden root-run in which to start, and often thrive remarkably well. The subsequent management consists in merely keeping the surface clear of weeds, and in copiously watering should the weather prove dry. This style of planting is termed digging in.

Crowbar planting is the last mode to which there is any occasion to refer, and it is doubtless one of the best. The ground can hardly be too rich and fine for this style of planting; where it is otherwise, a huge crowbar or dibble is often used to make a hole from 18 in. to 2 ft. deep, and about 4 in. in diameter; several inches of the hole are then filled up with rotten manure or rich compost, on which the Leek plants are then dropped, and frequently left to shift for themselves without any subsequent treatment; and they mostly grow so fast that before the autumn their long blanched stems have filled the holes and hidden them and the whole ground with crowns of enormous leaves. It used to be customary to crop the leaves of Leeks at the time of planting to check evaporation, and also, as was supposed, to throw more strength into the roots and stems, while some cultivators, with the same mistaken notion of the effect, took the points of the leaves several times during the summer; but experience has since proved that the leaves and the roots must be left intact as far as is possible if the finest Leeks are to be produced. These useful vegetables are in season from September to April, though it is possible to have them earlier and later. Those sown in February will last until the end of January, and those later sown will keep well without running to seed till April or May. Many cultivators take up their Leeks in the autumn, and "heel" them in closely together, and rather deeper than previously, after the manner of Broccoli; some also cut off the roots, and store them in earth or sand like Celery is preserved in cold climates; they are, however, apt to lose flavour when kept long after this fashion, either in the ground or in a cool cellar. It is a common practice with those who wish to prolong the Leek season as far into the summer as possible, to lift the entire crop about the middle of March, and lay in the plants pretty closely together, without unduly crowding them, in a north border, choosing the shadiest and coolest position.

No one need take the trouble to save their own Leek seed, for sufficient can be purchased for 1s. to furnish the majority of gardens. However, should a cultivator desire to have seed from his own plants, all that is requisite is to save a few of the finest—the less blanched the better—for a second year, when they will be sure to flower and ripen abundance of seeds in the autumn. The flower is of a purple colour, and the seeds when ripe are of a brown hue; they may either be thrashed out when ripe, and treated exactly like Onion seeds, or they may be left in the head, and stored, or suspended in a cool, dry place till wanted. Old Leeks, especially of the later, smaller crops, may also be made to produce useful bulbs by leaving them in the ground, and cutting off their tops nearly level with the ground early in April, when they will immediately commence to throw up fresh flower-spikes, which must be persistently pinched out as they appear; by-and-by the Leeks will give up the contest, the bases of the old leaves that were left when the plants were cut down within 1 in. or 2 in. of the ground will wither, and the old stem and roots will decay; but in the struggle for life it will be found that the old Leek has pushed out several young pseudo-bulbs, which will be found clustering closely around their dead progenitor: these bulbs produce the very finest of Leeks, which are far superior in quality to those raised from seed. D. T. Fish.

GRAFTING THE POTATO ON THE TOMATO.

The plant, a portion of which is represented by the accompanying illustration, was exhibited at South Kensington on the 6th inst. by Mr. A. Dean, of Bedfont, who had succeeded by inarching in placing a Potato on a Tomato early in summer when the plants were small. He was induced to try this experiment because Mr. Maule, of Bristol, had the previous year been successful in uniting a graft of the Potato haulm to a stock of the wild Solanum Dulcamara, or Deadly Nightshade. The result was that Mr. Maule obtained tubers at the root, but whether these were genuine Potatoes that have since grown and produced crops or not has not yet been shown. Mr. Maule hoped that his experiment might, by infusing into the Potato plant the blood of the wild Solanum, result in the production of a strain of disease-resisting Potatoes. Had this happened, however, it is not improbable that the tubers would have been too acrid, if not too poisonous, to be eatable; the gain, therefore, would have been *nil*. The phenomenon of tubers being attached to the roots of this wild Solanum has been variously accounted for, the most probable theory being that the tuber-forming sap of the Potato plant had found a vehicle for its conveyance to the roots through the stem of the Nightshade stock. In Mr. Dean's case the union of the Potato with the Tomato was obtained as follows:—He placed small plants of each in 60-sized pots close together, then he cut a strip from the side of each stem, and tied them together with a piece of soft roffia, the process being one of inarching rather than of grafting. To insure uniformity of motion to both if removal became necessary, both pots were placed into a large one, and secured with soil. In six weeks a union was effected, when the top of the Tomato and the stem of the Potato were severed, and the grafted Tomato top remained fresh and vigorous. The growth was steady but continuous, presenting a dwarfed branching habit, and ultimately the bud axils produced fleshy Potato-like protuberances that developed into genuine tubers—not, however, as is the case with some haulm growths, on the main stem, but the extremities, and from the eyes of the branches, as shown in the woodcut. Of course in this case no beneficial result to the Potato is looked for, but the experiment appears to establish the fact that the Potato generates tuber-forming sap that must be expelled in some way or other, and if roots are not available then the branches must do duty instead. Mr. Dean hopes next year to obtain a reverse graft—

Potato grafted on the Tomato.

the Tomato upon the Potato—and thus see whether or not both forms will be productive on the same plant. M.

SALT AS MANURE.

I question whether any substance used as manure requires more caution in its application than salt in a raw state. In proof of this I need only mention that it is both a promoter and destroyer of vegetable life. Of its being a destroyer there can be no question, inasmuch as all of us can recall instances of disasters attributable to it in one shape or other. When employed for destroying weeds on walks, should a sudden fall of rain come and carry it down to the sides of the walks, it kills the Box or other live edgings, and even trees and shrubs have been known to be destroyed by it. It is thought that such sea-side plants as Asparagus can scarcely have too much salt in any form, or at any period of their growth; but we have known Asparagus seriously injured when salt has been applied to it in full growth—wherever it came in contact with the tender stems the tops withered and died, although the roots were unaffected. In many instances salt is applied as a custom rather than from any conviction that it will prove beneficial. The argument that sea-side plants require salt is a very forcible one, but it should be remembered that cultivated plants are very differently circumstanced from those in a wild state; in a wild state sand, shells, and shingle, afford Asparagus abundant drainage, and being poor as regards manurial qualities, its growth is naturally hardy, and altogether different from that of plants grown in highly enriched vegetable mould. It is generally admitted that Asparagus requires efficient drainage, for in cold water-logged soils the roots perish, and the beds become in a very short period worn out, whereas in warm, sandy soils they have been known to exist for nearly a century, and even then bear good crops. Large quantities of salt annually applied to soils in any way adhesive causes them to become sodden and the roots to rot during the winter and spring, and although Asparagus is naturally a very hardy plant, yet its crowns suffer from frost when in a saturated condition. Of course salt, owing to its power of attracting and retaining moisture in soils, is in some cases of great benefit to growing crops, for during the hot weather which we had in July and August last, it was found that all crops on land that had originally been under Asparagus appeared to enjoy the heat, which seemed to have little effect in drying the ground, even when the application of salt had been previously discontinued for a considerable period. From this it may be concluded that salt is as lasting in its effects as any manure which we can employ; but its beneficial results will be more obvious in hot, dry seasons than in those of an opposite character. The nature of the land, too, should be considered, for in cold, wet soils, it is questionable whether it would not be positively injurious. When applied as a winter dressing to vacant land its beneficial results are twofold—it destroys insects, and, when thoroughly incorporated with the soil, eventually assists growth. When applied to crops in a growing condition, the best plan is to administer it in a liquid state and largely diluted with water, for although some vegetables will withstand strong applications of it, it is at all times wisest to use it harmless as regards strength, and to give it more frequently. Most of the Cabbage tribe are improved by its application, also such root crops as Beet, Parsnips, &c.; Celery is likewise greatly invigorated by it when given in a liquid form, and its application is a means of keeping off the attacks of slugs and similar plagues, which in some soils greatly disfigure it. James Groom.

EFFECT OF TEMPERATURE ON THE GROWTH OF POTATOES.

Most of us have noticed that even during the worst periods of disease some Potato fields escape infection, and I have found on careful inquiry that as a general rule those fields which escaped have been of a darker colour than those attacked, and this has led me to the conjecture that the heat caused by the absorption of the solar rays must have strengthened the constitution of the plant. Soot is considered by practical men as a preventive of the Potato disease, and it occurred to me to determine by experiment whether, besides the good which its contained ammoniacal salts effect, a part of its virtue might not lie in its imparting a dark colour to the soil and so rendering it a better absorbent of solar heat. I therefore had the following experiment tried to decide this question:—A piece of ground was chosen, little adapted for the growth of Potatoes, consisting of a kind of blue till. The ground was divided into two parts, and both were planted with Potatoes in the ordinary way, using stable manure. The one half was left as planted, while the other was covered with soot which had been carefully washed till no soluble matter remained in it. Those with the soot sprouted first and were all through much healthier than the others. A series of temperatures were taken until the foliage was too thick for much sunlight to penetrate, and then resumed when the foliage was beginning to fail till the tubers were dug up. The temperature of the air was not kept, as we have no idea from it what is the real temperature of the leaf, as we do not know how much heat it absorbs from the sun's rays. All the temperatures were taken on sunny days, as on otherwise there was no difference in temperature. The following Table gives the two series of temperatures. They were taken at 2 in. and 8 in. below the surface, and always simultaneously, but not at regular intervals, and in reality do not represent the actual average temperature of the earth, but they serve the purpose I intended to show—the higher temperature of the dark-coloured earth.

	Earth Covered with Soot.		Pure Earth.	
	Depth 2 in.	Depth 8 in.	Depth 2 in.	Depth 8 in.
	55·4	52·6	53·0	52·1
	56·9	55·0	55·2	55·4
	67·2	63·9	65·1	60·8
	64·5	63·2	63·8	62·4
	61·7	58·7	58·8	58·0
	63·0	60·6	61·4	59·2
	58·1	56·9	57·2	56·3
	64·2	62·2	63·5	61·8
	65·4	63·8	63·9	62·0
	63·2	61·4	60·0	60·0
Average	61·96	59·83	60·19	58·74

These numbers show distinctly that the Potatoes grown in a dark soil have a warmer climate, so to speak, than those in a light one. The tubers with no soot were weak and a great deal of disease among them, whereas those which had the covering were larger and nearly all healthy. Still, as the following numbers show, the principal inorganic constituents were present in nearly the same proportions. No. 1 is from the soot-covered tubers; No. 2 from the others.

	No. 1.	No. 2.
Per-centage of ash	3·85	4·27
Potassium	38·25	39·73
Sodium	2·17	2·04
Magnesium	2·42	2·87
Calcium	4·02	3·75
Phosphoric exide...	10·94	10·51
Sulphuric oxide	5·22	6·83
Chlorine	5·03	6·15

The principal result to which I wish to draw attention, however, is the manner in which the starch granules are developed in the two sets of tubers. First as to quantity. The method of estimating the starch was as follows:—The best Potatoes from both portions of the soil were cut up and dried, and a weighed portion treated with alcoholic potash to remove sugar, fat, &c., and dried and weighed; then treated with diluted hydrochloric acid to remove the starch, and again dried and weighed. The difference between the last two weighings gives the starch in the original quantity. In this way the Potatoes grown under soot gave 22·5 per cent. of starch, and those in the plain ground 17·5 per cent.—a difference of 5 per cent. Then as to the size of the starch granules:—Micrometrical measurements of 20 average granules in the good Potatoes gave an average of 0·175 m.m., whereas 20 of those from the diseased tubers gave only 0·155 m.m. We see from this that not only were the granules smaller, but their number was less. In the Potatoes poor in starch the substance was altogether of a more fibrous nature. It thus appears that the increase in temperature gives a great impetus to the growth of starch granules both in size and number. I know that an investigation like this would require to be extended over several years to make sure of a definite law, and such was my intention, but as I had to leave this country last spring, the experiments I intended to carry on this year were not accomplished, and I have no prospect of being able to resume the investigation soon; so I considered under these circumstances that the above results were sufficiently striking to warrant publication.—J. B. Hannay, F.R.S.E., in the "Chemical News."

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Solanum marginatum affected with Potato Disease.—Early in Sept. I had several fine specimens of this Solanum badly attacked by the Potato disease (Peronospora infestans); it has, however, ceased to be active for some time, and the plants have now outgrown its effects. Potatoes with us are quite ripe, and are but slightly attacked by the disease this year.—J. D. M., *Falmouth*.

Garden Turnips.—This has been a critical season for Turnips after the first crop was over, the weather being so hot and dry we could only grow them on north borders. The best kinds I have found to be American Red Stone, Veitch's Red Globe, and Cattell's Purple Top; among white sorts, Cattell's Silver Ball is good in flavour and in shape—it is everything that can be desired for exhibition purposes.—W. Divers, *Wierton, near Maidstone*.

DOUBLE-SPATHED CALLA.

(CALLA PALUSTRIS).

At p. 55 of the present volume of The Garden, we gave an illustration of a double-spathed Ethiopian Calla or rather Richardia, and since that time a correspondent has sent us a similar instance of duplication in the Marsh Calla. This tendency to a repetition of parts is often met with amongst plants of the Order to which the Calla belongs, as, for example, in Anthurium Scherzerianum, which not unfrequently produces two spathes on one scape, and in the white-spathed

Double-spathed Calla.

variety of the last-named plant, which not unfrequently bears small white bracts, little spathes, in fact, interspersed among the sexual organs on the spadix. This tendency to duplication among cultivated Aroids is highly interesting, inasmuch as new seedling forms may yet be obtained in which the multiplication of parts just alluded to may become permanent.

B.

RED WINTER CHERRY.

(PHYSALIS ALKEKENGI).

This plant, a native of Southern Europe and the East, is just now in beautiful condition in many London gardens; its inflated capsular coverings are of a peculiarly bright orange-

Red Winter Cherry.

red colour, and, contrasted with its own or the green leaves of other border plants, its fruits, with their bladder-like calyxes, may not inaptly be compared to little Chinese lanterns that light up, as it were, their more sombre surroundings. The calycine coverings of the Cherry-like fruits are frequently macerated and skeletonized, and thus form very pretty table ornaments. In many parts of Asia and in Germany the subacid fruits of this plant are eaten, but their flavour is not so good as that of the Cape species, P. edulis, which is not unfrequently grown in our hothouses as an occasional addition to the dessert. In Peru and Brazil two other species, viz., P. pubescens and P. peruviana, are also grown for the sake of their edible fruits.

B.

GARDEN RECEIPTS.

Leaf and Flower Photographs.

The best method of taking impressions of leaves and flowers is undoubtedly by photography, but it is much more expensive than the ordinary processes, besides which it requires no small amount of patience and dexterity to procure a good result. The materials required are albumenized paper, nitrate of silver, distilled water, hyposulphite of soda, acetate of soda, chloride of gold, Kaolin or china clay, and white wax. One must also have a few pressure frames with spring backs, glass plates to fit them, two porcelain dishes, a 2-oz. measure, a box of scales and weights, a few sheets of filtering paper, some black pins, a glass funnel, a filtering stand, two stoppered bottles, and glass rods for stirring the solution. If residing near a photographic dealer, he may be induced to prepare the solutions at a slight increase on the cost of the materials, the necessary quantity of which and the size of the pressure frames depend entirely upon the scale previously fixed. Having provided materials, fill one of the dishes to within ½ in. of the top with distilled water, measure this off into a clean stoppered bottle with the 2-oz. measure, and having thus ascertained how much the dish will hold comfortably without slopping over, make up the quantity in the bottle to an even number of ounces. For every ounce of distilled water in the bottle add 60 grains of nitrate of silver and shake up until the whole is dissolved. Label this "Silver Solution." Next dissolve 15 grains of chloride of gold in 8 oz. of distilled water in a stoppered bottle, and label it "Gold Solution." Dissolve 30 grains of acetate of soda in 6 oz. of distilled water, and add to it ½ oz. of the gold solution. This should be kept in a stoppered bottle and labelled "Toning Solution." It is used for changing the colour of the finished print from a foxy brown to an agreeable purple or black tone. It should be mixed at least twenty-four hours before use. It can be used over and over again for months, merely adding ½ oz. of gold solution and 30 grains of acetate of soda in proportion for every two sheets of paper. Dissolve 4 oz. of hyposulphite of soda in a pint of ordinary water in a common corked bottle which is to be labelled "Fixing Solution." Not more than one sheet of paper should be fixed with this amount of solution. By "sheet" of course is meant the large sheet, measuring 23 in. by 17 in. All solutions containing gold or silver must be made with distilled water, and kept from the light in stoppered bottles. The fixing solution may be made of ordinary water and kept in a common corked bottle. The first part of the process is to sensitize a piece of the albumenized paper on both sides in order to take the negative print, which is to serve as a matrix for producing any number of positive copies. Pour the silver solution into one of the dishes, which must be kept for this special purpose only, and float the paper glossy side downwards on the top of the liquid for five minutes, taking care to avoid air-bubbles. Strip it gently off the surface of the solution as if it were a piece of skin, and lay it down again on the other side for another five minutes, so as to saturate it back and front. Lift up the corner with a black pin, slip it off the surface of the solution as before, allow it to drain for a couple of minutes, and pin it to a suspended string or tape to dry. The nitrate of silver solution must now be poured back into the proper bottle, and when required for use should be filtered through filtering paper into the dish. The funnel being placed on the stand, a piece of filtering paper is folded in four and opened out to form a cone. This is slipped into the funnel and the sensitizing solution poured into it so as to drop into the dish without splashing. The whole of this operation must be performed either by candle-light or in a room from which most of the white light is excluded by a sheet of yellow calico. When dry the sensitized paper should be put away in a light, tight, dry box or cupboard, or shut up in a book between two sheets of blotting-paper, so that the printing ink cannot act on the sensitized surface. The paper

thus prepared will keep for two or three days, and is used for taking negative impressions of the leaves, that is to say, impressions in which the lights and shades are reversed. The leaf to be used should be perfectly dry, and the ribs, if too prominent, should be pared level with a sharp knife, otherwise part of the impression will be blurred. Place one of the pieces of glass in the pressure frame, and on it the leaf reverse side downwards. Lay the prepared paper on the leaf with the glossy side next to it; close the pressure-frame and expose the whole to the full effects of the sun. The amount of exposure depends on so many different circumstances that no absolute rule can be laid down with respect to it. Suffice it to say that the impression must be examined from time to time, and when the lightest parts of the paper are just beginning to colour, the picture may be considered as being fully exposed. Both in this and the positive process, nothing but experience will teach the exact amount of exposure. Some leaves on fine days require less than half-an-hour's exposure, while others in unfavourable weather must be exposed for one or two days. The negative picture must now be fixed, that is to say, it must be made insensible to light by immersing it in the fixing solution in an ordinary soup plate or pie dish for half-an-hour, after which it should be washed in water in a large baking dish or pan for twenty-four hours, the water being changed at least six times, the object being to wash every particle of the hyposulphite solution out of the picture. If running water be obtainable it should be used, in which case the picture will be thoroughly washed in from six to eight hours. It should next be hung up to dry, or dried before the fire. Warm a common slate until it is just too hot to touch, lay the negative down on it, and rub it all over with wax until it is thoroughly saturated. Iron it between blotting-paper to remove the superfluous wax, and the process is ended. The paper for taking the position is prepared in the same way, with the exception of the glossy side only being sensitized. The impression from the negative is taken exactly in the same way as was that from the leaf, the exposure in this case being just as much a matter of judgment as in the other. When fully exposed immerse the print in a dish filled with the toning solution, taking care to move it backwards and forwards until the proper tone is obtained; this may be done in the faint light from a window with the shutters nearly closed. When the tone is satisfactory wash the print at the top and treat it in the same way as the negative print, of course omitting the mixing process. The subsequent treatment of the picture must be left to the operator's own taste. The most rigid cleanliness must be observed, and the fixing solution being utterly antagonistic to the silver solution, great care must be taken to prevent any admixture. Merely handling the silver dish or funnel with fingers covered with the fixing solution would be quite enough to spoil the silver solution beyond recovery. Whenever even the bottle containing the fixing solution has been handled, the hands should be well washed and rinsed before performing any of the other operations.

Snails and Slugs.

All who have ever had a garden, or grown a Cabbage or a Cauliflower, have had to contend with Snails and Slugs. Dryness favours the movements of most vegetable destroyers, but the opposite holds good in the case of Snails and Slugs, whose greatest depredations are committed during damp weather and in early spring. The damage sustained by seedling Cabbage, Cauliflower, and Lettuce plants through their ravages is incalculable; and it is not the seed-bed alone that suffers, for, even after the plants are established in their permanent quarters, they are often eaten over near the surface of the ground and destroyed, a bed of well-grown, crisp Lettuce, Cabbage, or a row of winter Celery being a favourite feeding ground with them. They are equally at home in the plant-stove or Cucumber-house, with a winter temperature of 70°, or under a hand-light of Lettuce or Cauliflower plants, silently doing their work of destruction, unless prevented by hard frost. There are few Orchid growers who have not had cause to lament their presence, in the shape of young growths, flower-spikes, and roots eaten off, for here their operations are not interrupted by excessive droughts or pinching frosts. The wonderful powers of instinct possessed by even such pests as these are scarcely known to those even who make their habits a life study. In the open air, where Slugs and Snails are more numerous, and where their food abounds in greater quantity than in plant and fruit-houses, we have not an opportunity of fully seeing how they are attracted to a given spot where food suited to their taste exists. Slugs do serious harm in the Orchid-house by eating indiscriminately whatever young roots are made above the surface of the soil, as well as young growth and flower-spikes. They do not often exist here in great numbers; but a few continually get in, often in the shape of eggs, in the potting materials, or they find their way in under the doors. In the Cucumber and Melon-house, and in pits and frames devoted to the cultivation of these plants, Slugs are generally troublesome, being introduced by means of the fresh soil, which is frequently required in such houses. They are very troublesome, too, in Fern-houses, destroying the young fronds of some Ferns as they appear, such as Adiantums, Thamnopteris, some Polypodiums, &c. They have such facilities here for hiding and breeding that it is difficult to eradicate them if once they are allowed to get to a head; continual trapping with materials such as above advised, and frequent hunting for them by candle-light will, if persevered in, clear the house of them. The means required for the destruction of these, like many other garden pests, are almost as varied as the different plants and situations to which their depredations are extended. Preventives, however, are the best remedies.

Apples.—As soon as the unmistakable slimy track of the Slug is perceived in the stove, Fernery, or Orchid-house, a few slices of sweet Apple should be scattered about somewhat plentifully. Look over them two or three hours after dark, when the Slugs are almost certain to be caught feeding.

Bran and Chaff.—Barley chaff and awns matted round Lilies and other tender or succulent plants or thick-foliagad hardy bulbs, is a good preventive. Bran is an article of which Slugs are extremely fond, and seems to attract them from all quarters. Mr. Coleman, gardener to Lord Somers, adopts the following method of using it:—A lad is sent along all the walks of the garden each evening with a bag or bucket full of bran, and he places a handful of it on the borders at every 8 ft. or 10 ft. or so, in a heap; early the next morning he traverses the same ground with an empty bucket, dust-pan, and small broom, the heaps being generally found covered with them; the lad then sweeps the whole into his dust-pan, and empties it into the bucket, and by the time he has finished his walk many hundreds, if not thousands, are thus captured. A week or two of such work, or even a day or two now and then, must be the means of saving a great deal of our garden produce. When collecting the Slugs a little salt and water should be thrown into the bucket, which will effectually prevent the escape of a single one when captured, as the salt causes them to sicken and die at once.

Cabbage Leaves When the ground is covered lime cannot always be used, especially in flower gardens; in these cases get some Cabbage leaves, warm them in an oven till hog's lard will spread over the surface; place them overnight near your favourite plants, and almost every Slug will be found under them in the morning. It is hardly necessary to say that there must be no salt in the lard. In the case of open borders, rockwork, and rootwork, Cabbage leaves should be placed every day round the plants to attract the enemy; a lodgment will soon be made on them. They can be looked over in the morning and disposed of, thereby saving the blossoms of our favourites from injury.

Earthen-ware Protectors.—These may be had in the form of an 8-in. flower-pot without the bottom. One of these put over each plant when planted out cuts off all interference from Snails until the plant has grown out of their reach. This plan is somewhat expensive at first, but cheap in the end, as the pots not only shut out Snails, but, if the days be hot or the nights very cold, they form an excellent protection to the plants when newly planted.

Hand-picking.—When everything else fails, hand-picking at night with a lantern may be resorted to. To be effective it must be persevered in night after night until the pest is diminished. It may also be resorted to early in the morning before they have got under cover. In the case of Cabbage

plants pieces of flat tile well greased on the bottom surface should be placed here and there at distances of 6 ft. or 9 ft. apart, and looking them over twice a week through April and May. An active boy will go over a considerable breadth in a couple of hours, dropping the Slugs into an empty flower-pot, or any vessel in which they can be taken and destroyed. If this be persevered in, by the time the fruit ripens they will be reduced in number so as not to do serious damage. This slow and unsatisfactory business should, however, be dispensed with as soon as their numbers can be reduced by the more general means already advised, and, above all, by adopting a thorough system of cultivation.

Lime.—Quicklime dusted on the ground early in the morning is a good remedy for Slugs, but to be effectual it ought to be repeated within an hour, because the Slugs have the power of casting their skins, and after getting rid of the lime will seek shelter.—Dusting the crops with soot and lime is more or less effective whilst the weather is dry, but when showery it is washed off as fast as applied, and the dustings may be repeated until the remedy has as injurious an effect as the evil it is intended to check. Where such is the case the whole surface of the ground should receive a dressing of lime. There is no better time for applying this than at the early dawn —on one of those mild damp mornings we often get in April—at which time they may often be seen so thickly on the ground as scarcely to admit of a foot being put down without treading upon them. Four or five cwt. of lime will be sufficient for an acre of ground. It should be prepared by spreading it out thinly on a damp floor until it has absorbed as much moisture as to reduce it to a powder. The way to apply it is to procure a box as large as can be carried under the arm, and then sow it by hand in the same manner as sowing corn broadcast. In this way a man will in a short time go over an acre of ground; to be effectual the whole garden should be thus sown over. It must be observed that it is only on those damp, mild mornings that the Slugs will be out in number. If the air be at all dry or frosty, instinct teaches them to keep under cover, but if a favourable day be selected, and the work carefully done, more of these pests will be killed by one dressing in this way than would be destroyed by a whole season's labour with partial measures, nor is the lime wasted, for it acts beneficially on the land. In the case of kitchen garden crops, a sprinkling of newly-slaked lime over the parts most frequented by them forms one of the greatest obstacles that can be put in their way; but even this is ineffectual as regards annihilation. Lime should not be applied when rain is falling, as in that case its effects are then quickly lost. The best time to use it is in the cool of the evening, when the Snails are busy at their work of destruction, and when the ground is moderately moist on the surface, or in the morning before the sun shines strongly.

Peewits.—A clergyman in Lincolnshire writes to a contemporary to the effect that his greatest friends in the garden and elsewhere, especially during the spring months, are a pair of Peewits. These birds, he states, hunt out the Snails and Slugs from amongst the Strawberries and young seedlings of all kinds, and effectually prevent any injury being done to plants or fruit. For two years he was without Peewits, and the Slugs increased to such an extent that he could scarcely pick sound Strawberrries, but since procuring more birds he has had no more Slug grievances. He finds the Peewits superior to both young ducks and sea-gulls as foragers for grubs, the birds being ornamental as well as useful.

Potato.—Slices of Potato scattered about stoves and Orchid-houses make excellent traps for Snails and Slugs. They should be examined nightly by candle-light three or four hours after dark.

Resin and Sweet Oil.—To prevent Snails from passing over walls and fences, place 1½ lb. of resin and 1 lb. by weight of sweet oil in a pipkin, and simmer over a fire until the resin is quite melted. A train of this placed along the top of the wall would be an impassable barrier to the Snails. The great advantage of this composition is that it never dries.

Salt.—A sprinkling of common salt on the top and at the bottom of a wall will effectually prevent Snails from climbing up or down it. A sprinkling of salt early in the Snail season will probably last for the year. A correspondent states that some years ago he could not rear a Tiger Lily flower. The Snails first ate the leaves, then the buds, and often the stalk. Seeing the effect of salt on Snails, he made a slight cordon round the Lily stem. No Slug or Snail faced it after this.

Sand.—A 6-in. band of oil paint sprinkled while wet with coarse sand, or, better still, with broken glass, will stand the weather well, and prevent the Slugs and Snails from trespassing.

Seakale Pots.—The best traps for the large garden Snail are empty Seakale pots, with the lids on, placed on the ground at intervals of a few yards on each side of the wall, a little before the leaves begin to fall. If these be examined once a fortnight during the autumn, the Snails will be found attached to the inside of the pots, and before Christmas not many will escape. At the same time, every crevice in the wall on both sides should be carefully looked over, for a number of the small fry will be in existence, and must also be destroyed.

Sea-gulls.—Where Peewits cannot be obtained, Sea-gulls form most valuable exterminators of Slugs and Snails.

Tar.—Coal-tar spread on the top of a wall, or round the roots of a tree or shrub, is an excellent preventive; the difficulty with it is, however, that it wants constant renewing. A mixture of any cheap oil or paint, with coal-tar in equal proportions, keeps liquid for a much longer period.

Train Oil.—To prevent Snails and Slugs from climbing trees form a paste with train oil and soot, and lay it on in a circle round the tree, a few inches above the ground, and it will form a barrier over which Snails or worms will not pass.

Various.—Amongst miscellaneous remedies may be mentioned slices of fat meat, scraps of crisp fresh Lettuce. Ashes, sand, barley-chaff, short bristles, cuttings from the brush-maker's shop, chopped straw, and brewers' grains are good materials for strewing as baits.

Water.—A zinc trough, containing water, placed on the top of a wall, will effectually prevent Snails from climbing over In Alpine gardens Snails are frequently so destructive that it has been considered desirable to construct a small rock-fringed streamlet round portions of the rock-garden containing the subjects most likely to suffer from them. This is not generally to be recommended, because of the difficulty of doing it well; nor is it generally necessary, inasmuch as the things commonly grown can be protected by ordinary means. It would, however, be practicable to run a neighbouring streamlet round a large rock-garden, concealing it here and there in shrubberies, &c., and letting it now and then meander through the Grass. A correspondent of "Science Gossip" states, that being much annoyed by Slugs he at length determined to fortify his Alpine bed, and admit none but such as could leap the ditch. This fortification he effected to his entire satisfaction by procuring a coil of zinc, which he cut into strips about 20 in. wide, and bent into U form, and buried as an edging round the bed, keeping it constantly nearly filled with water by connecting it with a fishpond. He found that neither Slug nor Snail ever crossed it, and it was very easy to banish all that happened to be enclosed. In small pots standing in the water he planted several pretty plants, such as Drosera, Pinguicula, Mosses, &c., taking care that no bridges were formed; the effect was very pleasing. At several potteries they are now manufacturing pots and pans with double sides to hold water between them for the same purpose, and to keep up a constant supply of moisture.

Zinc Collars.—Strips of perforated zinc, 6 in. in width, are used by many gardeners to keep Snails and Slugs from plants. A correspondent states that he encloses small Lily beds with strips about 6 ft. long, joined with wire as required; Cabbage leaves must also be laid round in order to trap any stray Slugs within the enclosure. A fine Hepatica angulosa in a border unprotected from Slugs, had every flower devoured before it had fully bloomed; but, since the zinc collar has been used, it has been untouched.

Stings.

The pain caused by the sting of a plant or insect is the result of a certain amount of acid poison being injected into the blood. The first thing to be done is to press the tube of a small key firmly on the wound, moving the key from side to side to facilitate the expulsion of the sting and its accompanying poison. The sting, if left in the wound, should be carefully

extracted, otherwise it will greatly increase the local irritation. The poison of stings being acid, common sense points to the alkalies as the proper means of cure. Among the most easily-procured remedies may be mentioned—soft soap, liquor of ammonia (spirits of hartshorn), smelling salts, washing soda, quicklime made into a paste with water, lime-water, the juice of an Onion, Tobacco-juice, chewed Tobacco, bruised Dock Leaves, Tomato juice, wood ashes, Tobacco ash, and carbonate of soda. If the sting be severe, rest and coolness should be added to the other remedies, more especially in the case of nervous subjects. Nothing is so apt to make the poison active as heat, and nothing favours its activity less than cold. Let the body be kept cool and at rest, and the activity of the poison will be reduced to a minimum. Any active exertion whereby the circulation is quickened will increase both pain and swelling. If the swelling be severe the part may be rubbed with sweet oil, or a drop or two of laudanum. Stings in the eye, ear, mouth, or throat sometimes lead to serious consequences; in such cases medical advice should always be sought as soon after the accident as possible.

Surface Caterpillars.

For small Surface Caterpillars the following mixture may be used:—¼ lb. of soft soap dissolved in a quart of boiling water, and filled up with cold to the amount of 4 gallons. Apply the mixture immediately, well wetting the roots of each plant. The grubs will rush to the mouth of their holes, and must be collected and destroyed at once, otherwise they recover, and go down deeper than ever. By two applications of the mixture, which does not hurt the most tender plant, all the grubs may be got rid of.

Thermometers.

Minimum Thermometers are filled with alcohol coloured with a vegetable material, and if exposed to great light or sunshine, that portion which is in the Thermometer stem will sometimes become bleached, and, in the process, deposit a substance which, if it surrounds the index, will prevent its moving freely in the tube. To adjust a Thermometer which is in the state here represented, proceed as follows:—Hold the Thermometer in the hand, bulb uppermost, and swing it violently backwards and forwards until the fluid in the ball (which possibly is not bleached) fills the stem entirely, then reverse the action, and swing the bulb downwards. This will have the effect of mixing the two portions of fluid, so that the bleached portion will be again coloured, and if not thoroughly so, repeat the operation. Lastly, stand or hang up the Thermometer for an hour, so that any particles of the alcohol hanging about the tube may be drained into the main column. The index will now flow freely in the tube if the experiment has been carefully performed, and no air bubbles left in the tube. These directions apply only to the horizontal spirit Thermometers; the upright maximum and minimum Thermometers which are partly filled with alcohol and partly with oil are too complicated to be set right, except by a skilled workman, when once out of adjustment. All such Thermometers should be strictly kept in the shade, as none but mercurial Thermometers will resist the sun's heat without risk of being put out of adjustment. C. W. Quin.

AREA GARDENING AT EASTBOURNE.

During a few weeks' sojourn at this pleasant watering place I have been greatly interested in its suburban gardens, and pleased with the care and good taste with which the different kinds of flowers are grown and arranged, not only in villa gardens but also in those attached to the smallest roadside cottage; in the town itself, too, even the windows and areas are full of flowers. Eastbourne having of late years become such a favourite seaside resort, handsome terraces have sprung up in every available locality, where even the upper windows commanded a sea view, and ground being difficult to get, gardens in the town are out of the question; but the style of architecture being showy and palatial the areas are large, and these have been turned into gardens, in which plants flourish luxuriantly, protected as they are from the salt spray and sea breezes. This mode of gardening having been found successful, has now become so general that in our daily walks we find ourselves continually looking down the areas with longing eyes at beautiful flowers in sheltered nooks—sometimes on Maréchal Niel Roses, at others on the giant heads of a tree Hydrangea, or the pleasing effects produced by the golden fruit and pale sky-blue flowers of Passiflora cœrulea, which often extends from the area half-way up the wall of the house. In these intramural retreats Ferns also revel in profusion, producing vigorous and gracefully spreading fronds, often in shady corners where little else would grow. Trellis work often encircles the basement and sitting-room windows, and is covered with climbing Nasturtiums, which form wreaths of tender green leaves and scarlet flowers. The unusually fine weather and natural mildness of the climate, considering that October is wearing to a close, are of course greatly in favour of the preservation of the beauty of these area gardens, which yet exhibit much of their summer glory. Plantations extend the whole length of the Parade, and these pleasantly relieve the formal sameness of the masonry. The Tamarisk here, as elsewhere on the south coast, literally flourishes in the salt breeze, which would kill plants of a less hardy constitution. Those who extend their sea walk beyond the limits of the parade to the Wish Tower, will find that that favourite resort has undergone great improvement in its general appearance, though much yet remains to be done in order to make the most of this situation with its grassy slopes and peculiar natural beauty. The gently winding walks are prettily planned, and the flower beds are wisely bordered with the ever-flourishing Tamarisk, but in such a way as not to hide the bedding plants. Good effects, too, might be produced by the judicious planting of a few shrubs that, like the Tamarisk, would flourish near the sea, leaving less space for the more expensive system of bedding out half-hardy plants which must be so continually renewed, and so carefully tended to produce anything like a striking effect. A good feature in this new garden is the abundance of really comfortable benches, evidently carefully placed so as to command the best views. Among flowers still in great beauty, and without the slightest sign of autumnal decay, may be named Roses in profusion, and consisting of some of the choicest varieties; Pelargoniums; double Stocks; bushes of Sea Lavender as large as Laurustinus, and covered with long feathery blooms; Mignonette; several of the large varieties of Clematis; the old favourite, Travellers' Joy, filling the air with sweetness; Fuchsias which grow to a great height; Major Convolvuluses still exposing their many-coloured blossoms to the morning sun; Phloxes in every variety, and numbers of other well-known favourites.—G. C. H.

NOTES AND QUESTIONS—VARIOUS.

Lord Palmerston Peach.—Having for several seasons fruited this Peach, I cannot recommend it as a desirable variety, except as regards size, the flavour being, here and at other places in this neighbourhood, very inferior to that of other kinds.—G. Fennell, *Fairlawn, Tonbridge, Kent.*

Rate of Growth of a Maréchal Niel Rose.—A small plant of this Rose, planted out last spring in a cool house at Syon, has made now (Oct. 16) ten rods nearly 2) ft. long, each being as thick as one's finger. Presuming that it was the 1st of March when the plant started into active growth, it must have grown considerably more than 1 ft. a day.—S.

Preserving Walnuts.—How can Walnuts be best preserved during winter? Is there a better way than keeping them in salt? and if not, in what proportion should the salt be used? Perhaps some of your correspondents will kindly answer these questions through your columns.—Minnie C. Noble, *The Pines, Bagshot.*

Cordyline indivisa.—This fine old decorative plant, now too seldom seen, again promises to become popular. After many unsuccessful attempts Messrs. Lee, of Hammersmith, have at last raised a batch of seedlings of the true variety, and they are now looking vigorous and healthy.—S.

Melons Splitting.—Can any of your readers tell me why Melons split before they are ripe? This has occurred to two sorts—the Scarlet Gem and Hero of Bath, both red-fleshed—in my Melon-house; they have not been subjected to an excessive heat, but the inside evidently swells faster than the outside. Other sorts do not appear to be affected in the same way.—P. P. B.

Passiflora edulis in a Cool House.—This useful Passion-flower is generally supposed to require a stove temperature, but a plant of it in my possession growing on a back wall, has this year fruited freely, although during the previous winter the house was only heated sufficiently to keep out frost.—H. D. Palmer, *Colchester.*

Bananas and Vanilla at Syon House.—Several large plants of Musa sapientum are now fruiting freely in a plant stove at Syon House, many of the clusters consisting of as many as fifty or sixty fruits of a size seldom seen even in Covent Garden. In the same house another plant somewhat scarce in England is in fruit, viz., the Vanilla (V. planifolia). It is trained up one of the glass ends of the house, and is thickly covered with pods, which are used in the kitchen for flavouring purposes.—S.

Moræa (Iris) fimbriata.—"M.," who laments the absence of this plant from catalogues, cannot have consulted that of Messrs. E. G. Henderson, or he would have found the name of this plant, together with its synonym, Iris chinensis; moreover, I am in a position to say that the plant is by no means a costly one.—J. O.

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

CHRYSANTHEMUMS.

AFTER the sparkling flush of spring blossoms, the richness and variety of summer flowers in field and parterre, and after the bright and varied leaf beauty of autumn, there comes a dreary time—the end of chill October and beginning of foggy November—which would be nearly flowerless were it not for the Chrysanthemum; and seeing, as we have done, what can be effected by means of this flower in the Temple Gardens, in the very thickest of London smoke, the wonder is that our public parks and town gardens elsewhere are not just now full of floral beauty. Dickens mentions in one of his novels a little strip of earth in Brighton, which had the remarkable property of always growing Marigolds. Great varieties of flowering annuals were duly consigned to the earth—nothing but Marigolds ever grew up out of it. It might almost seem the same in the case of the Temple Garden. Year after year it has its Chrysanthemum Show in November, and there its horticultural achievements begin, and to a great extent end. But that Show attracts. In the afternoons of this gloomy month there are other people visiting the courts and passages and squares of the Temple, besides attorneys and solicitors. And to such visitors the Temple has something to exhibit. Its present aspect may be, on the whole, dreary, its chambers singularly uninhabited-looking, and there may be a great presence of fog and a great deficiency of sunshine all about the place, but still it has its annual cheerful display of Chrysanthemums. Botanically speaking, all the now innumerable varieties of this favourite autumn flower have descended from Chrysanthemum sinense, which is indigenous to Japan, but we never yet saw an example of the wild plant in this country, and, as in the case of the Chinese Primrose, tree Peonies, and many other decorative plants from that country, I question whether wild examples really exist in our herbaria. It was once the rule to consider every plant introduced from China or Japan to be a wild species, but the fact is, that both Chinese and Japanese cultivators have long been noted for the care as well as for the skill with which they select and propagate any sport or other divergence from the normal type likely to be of service to them as decorative plants. Thus, as Mr. Fortune informs us, these cultivators are not content with dwarfing the Chrysanthemums, so as to obtain miniature plants covered with flowers in small pots on their own roots, but some of their plants are actually grafted on the stems of a species of Artemesia or Wormwood, and in this way free-blooming standards are obtained. The flower has long been known to us from the representations given of it by Chinese artists on porcelain and lacquer ware, and according to Chinese legends it is said to have been grown in their gardens for the last fourteen centuries. The first examples of Chrysanthemums in this country were obtained through the enterprise of M. Blancard, a merchant of Marseilles, who in 1789 imported three different varieties from China, one with purple, one with white, and one with violet flowers. Only the purple kind lived, and this was sent to the Jardin du Roi, at Paris, in 1791. This had been transmitted to this country in 1790, but it afterwards died. This so-called purple variety is the commonest form of the species; it was introduced to Kew from M. Cels, of Paris, in 1790, and flowered first at Colvill's Nursery in the King's Road, Chelsea, in November, 1795; it was figured by Curtis in the "Botanical Magazine" of the following year (t. 327). Between the years 1798 and 1808, inclusive, eight new varieties were imported from China into England in the following order: the rose and the buff together in 1798, the golden-yellow and the quilled yellow together in 1802, the sulphur-yellow at the latter end of the same year, the Spanish brown in 1806, and the quilled and large lilac together in 1808. Later importations have produced two others, the Tasselled white in 1816, and the Superb white in 1817. The descendants of these spread with wonderful rapidity, and soon found their way to the gardens and casement windows of nearly every cottager. The time of Chrysanthemums was formerly limited to the months of November and December, but of late years some Continental kinds have been introduced which flower from the beginning of August until the late varieties begin to bloom at the end of October. The late kinds are, however, the most valuable, and to these we shall more especially direct attention. The annual display in the Temple Gardens, inaugurated some twenty or more years ago by the late Mr. Broome, is just now in perfection, and is a bright and beautiful illustration of what the Chrysanthemum is capable of becoming in town gardens. Here, within a stone's throw of Temple Bar, is a floral exhibition well worth inspection; all the plants of which it consists have been grown in pots in the open air during the summer, and although now under a glass roof, this covering is more to protect the delicately-tinted flowers from dust, rough winds, and rains, than from actual cold or frost. Among the more striking varieties to be seen in good condition this season may be mentioned King of Denmark, a fine lilac-purple flower; Mrs. Dixon, a rich golden sport from George Glenny, which is in itself a clear canary-coloured sport from one of the best of all incurved white varieties, Mrs. G. Rundle. Mrs. Dixon is certainly an acquisition similar in shape to the Mrs. Rundle type, but with something of the hitherto unapproachable bright yellow colour of the well-known Jardin des Plantes. Mrs. G. Parnell is a good white, similar to Mrs. G. Rundle, but rather larger and furnished with distinct-looking foliage; Vesta, although an old kind, is still one of the most effective in its way in the whole collection. A variety named refulgens I saw here for the first time; in colour it is unique, its petals being of a full and rich crimson hue, well contrasted with a golden centre. Nevertheless, this centre, however effective from an artistic or decorative point of view, is of course fatal to the variety as an exhibition or florist's flower. One of the most distinct-coloured varieties here is Bernard Palissy, a rich orange-brown in tint, the backs of the petals, which are incurved, being of a golden-yellow colour. Nil Desperandum is another rich brown flower well worth a place in collections. Hereward is an effective purple and lilac-tinted variety; and Prince of Wales, similar in colour, is also in good condition. A canary-yellow variety named Delight is pretty as a decorative kind, but again a green eye is conspicuous. Globe, a fully-incurved white flower, deserves notice, as does also Garibaldi, a fine incurved flower with crimson-maroon orange-backed petals. A short, full-petalled, lilac-purple variety named Newton is well worth culture, the flowers, although somewhat irregular, being full and bright in colour; indeed, as a decorative plant, it is an admirable kind, and shows to advantage backed, as it is here, with white and yellow and crimson Japanese varieties. Alfred Salter, Queen of England, Empress of India, Empress Eugènie, Golden John Salter, and many other old favourites are in much better condition than usual. Some of the Anemone-flowered section are very lovely, and the weird-looking Japanese kinds are likewise in perfection. Among the latter is Elaine, a large strap-petalled white flower just now nearly perfect, having a full centre; Fair Maid of Guernsey, another large white variety, having slender-quilled petals; and Ab-del-Kader, a wiry-petalled flower of the richest crimson. These Japanese varieties are by far the most elegant of all Chrysanthemums from an artistic point of view, inasmuch as the large-flowered kinds—most valued for exhibition purposes—must needs be nearly as formal in outline as a cricket ball, and moreover the petals must be as regular as slates on a roof. We are glad to see, however, that an improved and more natural taste is taking place in regard to these flowers. One of the outside borders in these gardens is just now all aglow with masses of the small-flowered or Pompone varieties, conspicuous among which may be named Mr. Murray, a rich purple flower with a yellowish eye; General Canrobert, a clear yellow, and generally one of the earliest to bloom, but rather late this season; lilac, white, and yellow forms of Cedo Nulli all good; also Madame Martha, a clear white, free-blooming sort, largely grown in pots for Covent Garden Market. To these may be added Salamon, a full crimson-purple kind, and Florence, an excellent crimson-maroon. Altogether the Chrysanthemums at the Temple this year are better than usual. F. W. B.

NOTES OF THE WEEK.

Hæmanthus cinnabarinus.—A beautiful head of flowers of this Hæmanthus, measuring 18 in. in circumference, and of a brilliant cinnabar-scarlet colour, has just been sent to us by the Hon. and Rev. J. T. Boscawen. This plant, which is a native of the West Coast of Africa, is at present rare in gardens; a specimen of it in flower was, however, exhibited by Messrs. Veitch & Sons in the spring of the present year. So dense is the globular mass of inflorescence now before us that one flower enhances the colour of the other, inasmuch as the light is reflected from segment to segment, causing the whole to assume a warm almost flame-like tint, an effect still further augmented by contrast with the glossy, broadly strap-shaped leaves.

Persian Cyclamens at Lea Bridge.—The Cyclamen house in Messrs. Fraser's Nursery is now well worth a visit. It contains hundreds of plants that, as regards size of foliage and flowers, I have seldom seen excelled. The colours of the flowers, too, vary from the purest white to the deepest purple and crimson, and at this season of the year plants of this character make a display equalled by few others.—S.

Arbutus Unedo and rubra.—What grand objects these are at present in shrubberies, and even in the form of single specimens, completely covered as they are with beautiful flowers! When trained on walls, they are very ornamental, especially at this season, when both in fruit and flower at the same time.—A. H., *Thoresby*.

Pomegranate Trees in Bath.—There is, growing against a house in Lansdown Crescent, Bath, a Pomegranate tree, on which I yesterday (October 31) counted more than fifty well-formed fruit. There are many others in the city, but nearly all so badly pruned as to make it impossible for them to bear fruit.—H. N. Ellacombe, *Bitton*.

Fourcroya gigantea in Flower.—A specimen of this stately Amaryllidaceous plant, better known perhaps as Agave fœtida, is now in flower in the Succulent-house at Kew. Its flower-stem, which is at least 40 ft. high, has been allowed to go through the roof of the house, outside of which its tall, branching, pyramidal inflorescence, consisting of innumerable white blossoms, can be seen to advantage. F. longæva, perhaps the most magnificent plant in the Order, also flowered at Kew a year or two ago.—S.

Large-berried Grapes.—In one or two of the principal fruiterers' windows in Covent Garden Market may now be seen some magnificent examples of Gros Colman Grapes, each bunch of which cannot weigh less than from 2 lb. to 3 lb., and the berries are the largest and finest we ever saw. These, we are informed, have been grown at the Tweedside Vineyard by Mr. W. Thomson, and most certainly they are wonderful examples of skilful modern Grape culture.

American Squashes.—Good examples of the Hubbard and Turban Squashes have been sent to us by Mr. Caleb Porter, of Hampstead, who remarks that they deserve more extensive culture in this country as a substitute for other vegetables than they at present receive, as they can be used in a great variety of ways, can even be made into a delicious preserve, as Mr. Dean recommends in the case of the Vegetable Marrow. The large red soup Gourd of the French markets now finds purchasers in Covent Garden, and, together with some of the best American kinds, deserves the attention of our market gardeners.

Fruits of Herefordshire.—At a special meeting of the Woolhope Naturalists' Field Club, held on the 25th ult., it was resolved that a Pomological Committee, consisting of the members of the Club, in conjunction with growers of fruit, be formed to investigate the varieties of Apples and Pears grown in Herefordshire, to inquire into their origin and history, to ascertain their value and uses, and to name such varieties as are not known elsewhere, and which have a really distinct character, with a view to the publication of a "Herefordshire Pomona." It was further resolved that this work should be published in annual parts, quarto size, in continuation of Knight's "Pomona Herefordiensis;" that the first part should be issued at the close of next year, and that it should consist of three or more coloured plates with descriptive letterpress.

Decorative Plants in Covent Garden.—Small plants of the different sorts of Epiphyllum truncatum may now be obtained in Covent Garden, and very effective they are, as are also plants of the Perpetual or Tree Carnation Miss Joliffe, small examples of which bear from three to five open flowers and numerous buds. Bouvardia jasminiflora is likewise just now very beautiful. Among cut flowers are splendid wreaths of the golden-flowered Cestrum aurantiacum, a valuable old-fashioned conservatory plant allied to Habrothamnus. White Lilac from both French and English gardens has also made its appearance. This, together with Orchid blooms, the blue shot crimson buds of some Bromeliads, white Gardenias and Camellias, and rich purple Violets of The Czar and Queen Victoria types, are all used with good effect in wreaths and bouquets. Stokesia cyanea, a lavender-tinted Composite, is also effective in bouquets along with white Chrysanthemums of the Vesta type, Tuberoses, and Jasmine-flowered Bouvardias.

Tritoma Uvaria grandiflora.—This fine autumnal flowering plant is now in great beauty here. Planted in large masses, its orange-scarlet flower-spikes, which grow from 2 ft. to 4 ft. high, are produced abundantly, and in excellent condition; and, should the present open weather continue, they will be equally fine for some weeks yet to come. A large bed of it on the lawn, with Pampas Grass dotted about in its vicinity, has a charming effect. Being perfectly hardy, and the foliage at all times effective, it would form a fine object for planting in the front borders of shrubberies either in public or private grounds; but, to do well, it should be divided and re-planted every two or three years.—W. Cox, *Madresfield Court, Malvern*.

Orchids in Bloom at Cholmeley Park, Highgate.—We have now in bloom some very interesting Orchids, and among others Dendrobium Wardianum with over eighty expanded blossoms, a sight well worth seeing. Dendrobium formosum giganteum is likewise in beautiful condition, also various Oncids, Odontoglossum grande and O. Alexandræ (the last one of the finest varieties I ever saw), Sophronitis grandiflora, Vanda tricolor, Lycaste Skinneri, Phalænopsids, and seven kinds of Lady's Slipper. The chaste and beautiful Chysis bractescens, the admiration of all who saw it, we have just cut. Variegated Orchids are likewise just now very interesting.—F. Newman.

Apples in Covent Garden.—Newtown Pippin Apples, richly flavoured and otherwise excellent in quality, from the sunny slopes of the Hudson, have again made their appearance in Covent Garden Market. American-grown Lady Apples and other highly-coloured sorts are arriving in considerable quantities, and sell well on account of their fine colour and good flavour. From 6s. to 8s. per dozen is no uncommon price for good Newtown Pippins, and our own Pippins of the Blenheim and Ribston varieties fetch 10s. per sieve. Last season Newtown Pippins realized £3 per barrel, consisting of some 3 bushels, and this season prices promise to be much higher still, owing to the partial failure of our own crops. Good specimens of this Apple frequently fetch from 2d. to 6d. each retail, or more than the finest Oranges from Yuba, Florida, or Malta. Ribston Pippins not unfrequently realize from 3s. to 4s. per dozen; and as prices of Apples may yet become higher, a few acres of Ribston Pippin, Cox's Orange, Cornish Gilliflower, Blenheim Orange, and other fine-flavoured handsome varieties on the Paradise stock would appear to be no bad investment.—B.

Philadelphia Exhibition.—Referring to the awards at the Centennial Exhibition, the "Philadelphia Press" states that "the excellent assortment of galvanized wire netting exhibited by Messrs. J. B. Brown & Co., of London, has obtained the sole international prize medal. Messrs. Brown & Co.'s collection of English wire netting is, we believe, the most remarkable that has ever been shown in this country. It has been produced by improved machinery, which has not as yet been introduced into the United States." Awards have also been made to Messrs. Perks, of Hitchin, for oil of lavender; to Messrs. Veitch & Sons for trees, shrubs, and other plants; to Mr. Anthony Waterer, Knaphill, for trees and shrubs; and to Mr. B. S. Williams, Holloway, for hothouse plants and Ferns.

Royal Horticultural Society.—A special exhibition of Chrysanthemums, new plants, flowers, fruit, and vegetables will be held at the Gardens of the Royal Horticultural Society, at South Kensington, on Wednesday next, when collections of unusual interest will be exhibited by some of the leading growers.

Wallich's Lily (Lilium Wallichianum).—Mr. Elwes is in error in giving (see p. 426) solely to Mr. Peter Barr the merit of re-introducing this Lily in 1874, for in 1872 we received and distributed twenty very fine bulbs of this then exceedingly scarce Lily, and made arrangements for a further supply, but unfortunately the death of our correspondent stopped our arrangements for a year or two Similarly with regard to L. polyphyllum, we obtained last season a good supply of these hitherto rare bulbs, and our correspondent has promised to obtain for us, if possible, the yellow Lily mentioned by Mr. Elwes as growing in the Khasia Hills, which is at present an unknown species in this country.—Alexander Wallace, *Colchester*.

Northumberland Avenue.—The trees in this Avenue seem to be in a sad condition. Eight or ten out of thirty are already dead, and the others look as if they would not last the winter through. On the other hand, the trees on the Thames Embankment are flourishing apace, and are shedding their leaves much later than their congeners in the squares.

THE FLOWER GARDEN.

WINTER AND SPRING GARDENING.

Now, when flower-beds are stripped of their summer beauty, it will be necessary to have them turned up, their Grass edgings cut, and the plants to bloom in spring put into them with all possible speed, for the sooner they are in the ground after the end of October the greater will be their chance of giving satisfaction. When planted early they get well established in their new positions before severe weather sets in. Where spring gardening is not practised, it is a general rule to dig the beds deeply and leave them in as rough and open a condition as possible until they are again required to be planted; but even during winter flower-beds may be made attractive by filling them with green and variegated hardy fine-foliaged or flowering shrubs. Indeed, this is a matter that deserves to have much more attention paid to it than it at present receives, inasmuch as a good and well-arranged winter flower garden quite equals in effect many attempts which I have seen made at spring embellishment. When well carried out spring gardening in mild, genial springs, is very effective, but it frequently happens in cold wet seasons that the real beauty of spring bedding plants is not developed until the time has arrived for them to be removed to make way for the summer occupants of the beds, for if left until their beauty is exhausted, Pelargoniums and similar plants have but a short season allotted to them; nor is that the only drawback with which spring bedding is chargeable. The removal from the beds of such plants as Daisies, Violas, and Pansies, has to take place at a time when everyone has almost more to do than can be accomplished without having to divide, sub-divide, re-plant, and keep supplied with water a host of plants, the beauty of which at the longest is of necessity but of short duration. To these objections to spring gardening must also be added the labour of sowing, transplanting, and keeping clear of weeds such plants as Nemophilas, Saponarias, Silenes, &c., to say nothing of the large amount of ground required to be devoted to them in summer. Where, however, filling the beds in winter is not carried out, and where there are the means of conducting spring-bedding properly it should be practised; but where in spring labour is limited—and there are few places in which it is not—the usual mode of spring gardening may, in my opinion, be advantageously substituted by a system of bedding that does not incur one-third of the trouble and labour, and one which can be in every way more conveniently adopted. In narrow borders very small beds, or as edgings, a few Daisies and bulbs may be planted even in the smallest establishments, but where beds that swallow up thousands of plants have to be furnished, the return is unequal to the trouble and labour expended. A good collection of dwarf, hardy shrubs once formed will last for years with ordinary attention, and if grown in pots, or even planted out, they are easily removed from place to place. They incur no labour after being put into the beds, and during the summer if they be plunged in ashes or soil in a partially shaded situation, much watering is unnecessary. I refer to such plants as Euonymus, Aucubas, Sweet Bays, Laurustinus, Box, Rhododendrons, and Kalmias. The best effect is of course gained by variety, and if in addition to the shrubs just named, can be afforded such plants as Cypresses, green and golden Thujas, Silvery Junipers, Thujopsis, green and variegated Yews, and other compact-growing Conifers, a really good effect might be produced. As regards arrangement, the chief aim should be to avoid overcrowding and formality, and the more simple the arrangement the more pleasing will be the effect. When the plants are taken from the beds it will be well to prune in all straggling shoots that may occur, with the view of keeping them compact and dwarf, and if at the outset they have been potted in good, sandy, yellow loam they will not require re-potting for several years. According to a writer in the "Gardener," winter bedding should not consist entirely of shrubs; on the contrary, it is recommended that the spring plants now in use be judiciously arranged with the shrubs, and the effect of the whole eked out by largely pressing the hardy carpeting plants into the service as embroidery and edging. Combinations of these classes of plants might be made exceedingly effective even in mid-winter, the more striking and cheerful aspects being dependent on the shrubs. Nothing shows the effects which can be produced in winter by shrubs alone better than a walk through a well-stocked nursery where the various shrubs are grown in large groups and quarters. The colours among Euonymuses alone are very various and striking. In massing beds for winter, one or more varieties of shrubs may be used for the centres, to be banded round by such of the spring-bedding plants as may be decided upon for contrast, such as Myosotis, Arabis, Belvoir Castle Wallflowers, or Pansies. Or a bed may be filled entirely with shrubs, the centre of the larger growing sorts banded by Heaths, Euonymuses, Ivies, or other dwarf trailing plants, mixing the dwarfer shrubs alternately with Hyacinths, Tulips, or other spring bulbs, so that the ground may not be at any time bare, and yet the effect of the bulbs be enjoyed in spring. Large beds may still further be embroidered by the different Saxifrages, such as hypnoides and other bright green sorts, or the white crusted sorts and the different coloured Sedums. S.

Coreopsis aristosa.

A GRACEFUL COMPOSITE PLANT.

(COREOPSIS ARISTOSA).

This is one of the most showy and at the same time one of the most graceful of all late-blooming Composites, and, like its congeners, C. lanceolata, C. integrifolia, and several others, it is a native of Carolina and the humid marshes of Illinois. It succeeds well treated as an annual in our gardens, and, together with its allies, is valuable in a cut state, affording, as it does, a profusion of bright-coloured, slender-stalked blossoms at a time when really elegant and beautiful hardy flowers are

scarce. It was, I believe, introduced to our gardens by Mr. W. Thompson, of Ipswich, to whom we are indebted for so many handsome Composite plants. The illustration represents the natural size of the flower; it is a rich golden-yellow in colour, the disc being spotted with crimson-brown. It is difficult to imagine any golden-tinted flowers more beautiful than those of the different species of Coreopsis, especially when their graceful stems are inserted in a crystal vase and their flowers contrasted with the rosy, purple, and lilac tints of autumnal Crocuses and Colchicums. B.

Grass v. Ivy for Town Terraces.—About two years ago a friend had a beautiful Grass terrace in front of his house, but being anxious to improve its appearance, some one recommended taking up the Grass and planting Ivy, which process was accordingly completed, and the green-leaved Ivy, which was planted rather thickly, has now nearly hidden the soil, but as the house is situated close to the suburbs of a large town, the Ivy has never that clear, bright green colour so characteristic of it in the country, but, on the contrary, is continually black with the soot and dust which falls on it, and as this sombre hue is anything but cheerful-looking it has been resolved to root out the Ivy and replace it with Grass. I do not think Ivy should ever be planted on terraces near towns, and although it has not the same objections out in the country, it never at any time looks so neat and effective as Grass.—DEVONIENSIS.

Succulents Out-of-Doors.—I quite agree with "D." (see p. 420) that succulent plants should be more frequently employed out-of-doors than they are, especially on rockwork. The latter might be arranged to face south and north—on one side might be succulents, and on the other Alpines. This would suit the various North American Opuntias, such as humilis, Rafinesquiana, camanchica, Engelmanni, missouriensis, brachyarthra, which stand wet and cold with impunity; also Cacti, such as C. phœniceus, viridiflorus, and others. Besides their grotesque appearance, these plants bloom abundantly when once established and grown to a proper size. Hardy diverse-foliaged Yuccas, Agaves, and Aloes might also be planted out from April to November, intermixed with the above. Helichrysum, Erigonum, Poppies, Aubrietias, and similar warmth-loving herbaceous plants would likewise produce a good effect on the south side and make a striking contrast to that on the northern side, which ought to be adorned by shade-loving herbaceous and Alpine plants.—MAX LEICHTLIN, *Baden Baden.*

New Violas.—There are four of Messrs. Dickson & Co.'s new Violas of 1876 which I consider of a very superior description and excellent for bedding purposes, viz.:—Pilrig Park, massive pure white, with bright yellow eye, and rayed with violet, very dwarf in habit, and a perpetual bloomer; Holyrood, dark blue and fine yellow eye, the flowers being very large and of great substance (I believe this to be a cross from The Tory, but I consider it better than that fine variety); amabilis, fine lilac, with a brownish-crimson blotch in the centre; multiflora, lavender, centred with purple and rayed from the eye with yellow. The prevailing colour in the two latter is rather uncommon amongst bedding plants, and its effect is very striking.—H.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Cathcart's Poppywort.—This Indian plant is now well established in the Edinburgh Botanic Garden, plants having flowered and ripened seed there abundantly this season. It bears some resemblance to the Welsh Poppy.—V.

Lee's Prince Consort Violet.—This is undoubtedly one of the most handsome of all Violets. Its flowers are fully 1 in. in diameter, and are borne on stout stalks from 4 in. to 6 in. in length. Their colour is a rich violet-purple, and their fragrance delightful. Like its ally Victoria Regina it is sure to become a favourite in the markets, for none, even amongst the large-flowered varieties, makes bolder or better-looking bunches.—B.

New Snap-dragons.—Mr. Caudwell, of Wantage, has sent us some fine blooms of Antirrhinum majus—large in size, good in substance, and distinct and well varied in colour. Their prevailing tints are white, rose, orange, buff, purple, lilac, and yellow. One with deep velvety-crimson petals and an ivory-white tube is especially distinct and effective. Some of the forms are very delicately striped and speckled with rose, lilac, and purple on a white or yellow ground colour.

Veronica candida and V. canescens.—These two plants are very similar and are often confounded with each other. V. candida, where a white plant is required, will be found one of the best decorative plants, and equals, if it be not superior to, most of the Centaureas; it is certainly more manageable, for it defies the hardest winters, and propagates itself like a Groundsel. If denuded of its handsome flowers, it forms a low carpet of white foliage about 2 in. high, and is in the highest perfection in the middle of winter, and may be used for edgings or surfacing when the hardiest of winter flowers require shelter. It is a capital plant for parks or squares, and would, if better known, be most extensively planted.—THOS. WILLIAMS, *Ormskirk.*

THE KITCHEN GARDEN.

ONION CULTURE AND ITS PROFITS.

THE Onion is a very remunerative market garden crop, and one which is most successfully cultivated in the neighbourhood of London, and more especially in the Fulham, Chiswick, Woolwich, Deptford, and Mitcham districts. Large quantities are sent from Hertfordshire; and Sandy in Bedfordshire is also noted for Onions as well as for outdoor Cucumbers. The Sandy growers save large quantities of Onion seed, which attains a high state of perfection on their rich warm soil; and this is a profitable crop when it can be harvested in dry weather. Well-formed bulbs are carefully selected for seed-bearing, and these are planted in spring in rows which vary from 2 ft. to 6 ft. apart—Lettuce, Radishes, Spinach, or other low-growing vegetables being grown as intermediate crops. After the flower-stems make their appearance, they are staked at intervals, and twine or cord is strained on either side the rows to prevent the stems being beaten down by hail, rain, or wind. Ordinary Onion seed fetches from 2s. to 5s. per lb., according to the season; but the best seed, or that from improved or rare sorts, is more valuable. Onion culture is most successful on deep well-tilled soils; those which incline to sand rather than to clay being preferable, and the bulbs produced on well-drained or gravelly sub-soils are found to keep better than those from soils which rest on the clay. Land intended for Onions is generally roughly trenched during winter, being thrown into ridges so as to become thoroughly pulverised and sweetened by the action of frost. During dry, sunny weather in February the ridges are levelled, and the surface rendered smooth by harrowing and rolling, after which the seed is sown either broadcast, or in drills 9 in. to 10 in. apart. From 9 lb. to 12 lb. of seed per acre are required for an ordinary crop of keeping bulbs, but if small pickling bulbs be desired, the seed is much more thickly sown, 20 lb. to 30 lb. per acre being used. After sowing, the seed is raked or harrowed in, and the operation is completed by rolling the surface firm and even. After the young Onions appear above the ground, weeding and thinning are proceeded with as may be required. The varieties generally selected by growers for market are the Reading or White Spanish, Deptford, Brown Spanish, James' Keeping, Silver-skin and Two-bladed for pickling; while the Lisbon and Tripoli varieties are sown in August to produce young salad Onions during winter and bulbs for spring use. The Deptford variety is one of the best sorts, producing heavy, firm bulbs, which keep well through the winter months. Broadcast sowing is considered the best for spring-sown crops, as involving less labour; and as the bulbs, after thinning, stand at regular distances apart over the whole area, the produce per acre is considerably more than when sown in beds or lines. Those sown in the autumn are, however, always drilled on beds 4 ft. or 5 ft. wide, these being divided by narrow alleys which serve as walks for labourers who weed the beds, and draw the crop as required for marketing. The autumn sowings are generally made on land which has been cleared of Cauliflowers, Cabbages, or other early crops. The profits on a good crop of spring-sown Onions are considerable, although prices vary from one year to another as much as 50 per cent. For example, Mr. H. J. Morgan, Lodge Farm, Barking, tells me that in 1871 he sold his Onions for £43 per acre when growing, and the purchaser who harvested the bulbs made much more of them in the market. The following year, however, the highest price which could be obtained was £30, although the crop was equally as fine as that of the preceding year. The same season Mr. Aberhaut, of Mitcham, had a field of Onions which averaged 16 tons to the acre, and this crop realized £12 per ton, or £192 per acre in the market. Mr. Bagley, another grower at Turnham Green, had a splendid crop the same season, and this he sold at £40 per acre on the ground, the buyer undertaking to harvest and market the produce. A fair crop of Onions will average from 12 tons to 15 tons to the acre, and the average value varies from £30 to £50 per acre on the land, but a much larger price is obtainable if the grower have facilities for harvesting and marketing. The average price for good, sound-keeping Onions in Covent Garden Market is 4s. per bushel.

Inferior bulbs are worth from 2s. to 3s. per bushel, while the finest selected large bulbs, or the best silver-skinned pickling Onions often realize from 8s. to 10s.

Leeks are largely grown in London market gardens, and fetch remunerative prices during the autumn and winter months, when they are in demand for vegetable soups, or as a mild substitute for Onions in other dishes. Deep, rich soils are most suitable for Leek culture. The culture of the first crop commences in February, when seed is sown on a gentle hot-bed, and after the young plants make their appearance they are protected at night or during cold weather by being covered up with mats or loose litter; ventilation during fine, sunny weather being also necessary. Weeds are kept in check, and if, as sometimes happens, the young plants be too crowded, they are thinned. About the latter end of March or beginning of April drills are drawn, 10 in. to 15 in. apart, on a plot of well-tilled land, and in these the young Leeks are planted 6 in. or 8 in. apart. After planting, periodical hoeing, weeding, and earthing-up operations are performed, and in some gardens the first crop is assisted during hot weather by copious supplies of water. The first outdoor sowing is made in drills about the middle of February, and is succeeded by two other sowings at intervals of a month or six weeks apart, a succession of produce being thus obtained during the winter or spring. The produce of the first sowing is fit for the market about the end of July or beginning of August, and is quickly cleared off and sold, so as to make room for a secondary crop of Lettuce, Radishes, or Spinach. A late crop of Leeks is often sown widely apart in the rows, and intercropped with Radishes, Lettuce, Parsley, Beet, or other low-growing vegetables, while not unfrequently Leeks are themselves used as a catch-crop by being planted between rows of Asparagus, Broccoli, Strawberries, or for filling up vacant places among bush fruits or other crops. The best varieties are London Flag for the first or early-sown crop, and the Musselburgh, a long-necked hardier sort, for the late crops. Leeks for markets are stripped of their outer or soiled leaves and washed, after which they are tied up into fan-shaped bundles of from six to nine heads, according to size. These bundles are sold at prices varying from 2s. to 6s. per dozen. The finest examples in the main crops are marked, and carefully transplanted to a warm, sheltered corner, where they are allowed to seed.

Other Alliaceous crops, as Garlic, Shallots, and Rocambole, are more sparingly grown in market gardens, owing to their being used in small quantities for flavouring purposes, rather than in quantity as substantial food plants. All these may be planted in March in rows 1 ft. apart. They are generally propagated by offsets from the old bulbs or "chives," as they are technically called; but if large quantities be cultivated, then seed gives the best results, and this practice is successfully followed by Mr. Trigg, of Hayling, and also by the Jersey and Guernsey growers, who send the main supply of these high-flavoured esculents to our metropolitan markets. Seed is sown broadcast or in drills 1 ft. apart in March or April, and the subsequent culture is similar to that recommended for Onions. Both Garlic and Rocambole are highly remunerative crops. The demand is not so extensive as for Onions and Leeks, but then the prices obtainable are much higher, the ordinary retail price being 6d. per lb. An acre of good land will produce from 6 tons to 10 tons of Garlic from seed, and the wholesale value of this produce varies from £150 to £230—not at all a bad return. Garlic is one of the most wholesome and, when properly prepared, most delicious of all vegetables, and the one of all others a French cook would least like to be without. It is much used in Southern Europe and in the East now, as from time immemorial. In Spain a delicious relish is made by pounding Garlic in a mortar with Olive or salad oil until it assumes the consistence of honey, a little Lemon-juice or Apple-pulp being added if the flavour be considered too pronounced.

F. W. B.

Tomatoes.—I grow Hathaway's Excelsior (which is the handsomest and most productive of all Tomatoes) and its yellow compeer Green Gage. The fruit of the latter kind, however, seldom attains the size of that of the Excelsior; this lack of size and its peculiar tint do not promote its growth for market purposes, as there is an undoubted preference for good-sized, bright red fruit. I find board fences, erected specially for providing shade for Primroses and other spring plants, to be excellent sites for the growth of Tomatoes; the plants soon cover the sunny side, and at once give coolness to the boards, and produce a luxuriant crop. Persons who have no brick walls or other convenient sites on which to grow Tomatoes, will find that fences of rough inch board, 4 ft. in height, and secured by posts at intervals of 6 ft., will prove cheap and effective substitutes for walls, whilst the shady side in summer can be utilised for many purposes. Just now the latest fruit can be assisted to ripen if any spare lights be placed on their sides in front of the plants, as the riper the Tomato the better its flavour.—A. D.

ROTATION OF CROPS.

Market gardeners are said to till deeply, manure heavily, and plant whatever crop happens to be ready for the ground. That this is the best and most convenient practice for the cultivator for market is unquestionable, for he cannot afford to have his ground vacant; and, as he plants it two or three times during the season, he cannot follow up any system of rotation with regularity; but he adopts the practice when he can. With a gardener in a private establishment, however, the case is different. His object is not to raise and turn crops off the ground as quickly as possible, but to wait upon and suit the wants of his employer, and at the same time to produce good crops. The example of the market gardener he does well to follow when necessary; but, as his ground is not cleared so frequently, and as he rarely uses a tithe of the manure—not having it to use—that the market gardener does, he is of necessity compelled to adhere to the rotation principle as strictly as possible. It has never been satisfactorily explained on scientific grounds why a rotation of crops is necessary; but that it is necessary, and absolutely so, nobody for a moment doubts—the evidence on that head is too conclusive. Physiologists at one time supposed that plants threw off some kind of excreta from their roots which were injurious to after-crops of the same kind; but, it being found that plants in a healthy state did not excrete any substance whatever, this hypothesis was given up as untenable. The next and most plausible explanation is, that by cropping the ground often and repeatedly with the same kind of plant, we exhaust the soil of the food which that species requires—starve it, in fact. No doubt this practice does impoverish the soil; but experiment has demonstrated that the supposed exhaustion may be made good without any disadvantage if rotation be neglected, and this is about as much as is known at present. The uncertainty which exists on this point need not, however, affect our practice very seriously, or hinder a well-tried system of rotation from being carried out.

The common rule with cultivators is to let each crop be as unlike that which has occupied the ground before as possible. If this cannot be managed—if Cabbage must follow Cabbage, Greens, or Turnips—or any of the Brassica tribe, for example—then the only plan is to trench the ground 2 ft. or 3 ft. deep, and manure as liberally as can be afforded. I by no means wish to convey the idea, however, that crops will absolutely refuse to grow, or that they will seriously fail, if the same kind of crop occupy the same ground for a few years in succession without its being more than simply dug and manured. Plenty of people are obliged to plant their vegetables on the same piece of ground for years together, and yet they secure very fair crops; but the returns grow less and less annually. Fortunately for cottagers and others, the Potato submits to the repetition system better than most vegetables. Provided the ground be fairly manured annually, it will produce good crops for a number of years. I am acquainted with plots that have been cropped with Potatoes and nothing else for at least fifteen years, without even being once trenched, and the crops have always been equal, if not superior, to the generality of field crops in the same neighbourhood. To attempt such a practice, however, with such subjects as the Kales, Carrots, Onions, Peas, Beet, Parsnips, &c., would be very unwise. The rule laid down for our guidance, viz., that plants of the same Order should not succeed each other, is rather too vague for practical purposes; but the following directions as to change of crops will meet the wants, in most cases, of those who have to crop their garden ground economically, and as cultivators have often to do, on the mixed system; that is, cropping between the rows of main crops with other things—as, for example, sowing Spinach, or planting Cauliflowers between rows of Peas or Celery, &c., a common practice in almost every garden. Acting on the hint already given, that each crop should be as unlike the preceding one as possible, it of course follows that root crops should not follow root crops, and *vice versa*; neither should very exhausting crops follow each other, but partial rest should, as far as practicable, be given to the soil by following a heavy and exhaustive crop with a light one. None of the Brassica tribe should follow each other, but

they may succeed Beans, Peas, Potatoes, Onions, Celery, Beet, Parsnips, or Carrots. Peas may follow any crop but those of the Leguminous class, and may particularly follow Potatoes or other root crops, Onions, and Celery. Onions and Leeks usually succeed Celery, the ground being as a rule well manured for the last crop, and just in condition for Onions. Beans and Kidney Beans may, like Peas, follow any crop not belonging to the pod-bearing class, and may be succeeded by any of the Kale tribe—Beet, Spinach, or any spindle-rooted crop. Carrots may follow any but root crops or Parsley. Spinach may succeed Peas, Beans, Potatoes, Onions, Lettuce, or any crop but those of the tap-rooted section, especially Beet, to which it is allied. Seakale may follow any crop but those of the Cabbage tribe. Shallots and Garlic the same as Onions. Lettuce and Endive may almost follow any crop, being shallow-rooting plants, and greatly influenced by the way in which the ground is dug. Celery, owing to its peculiar nature, may succeed any crop, whether belonging to the same Order or not. The ground being dug, specially manured for it, and deeply turned up, it is not affected by the previous crop. Turnips are benefited by rotation more than almost any other crop, and should never follow any of the Crucifers within two or three years, unless the ground can be well trenched and manured. Potatoes do well after Peas, Beans, Celery, Spinach, or any other crop, but manure must be applied according to the exhaustive character or otherwise of the preceding crop. These directions, I am aware, can only be partially followed out in any garden, but they indicate the course to be pursued as opportunity affords.

The system of endeavouring to obtain other crops between the main rows, necessarily followed in most gardens, complicates the rotation system; but in such cases—as, for example, when Spinach or Cauliflowers are grown between rows of Peas or Beans, the best plan is to mark where the rows have been, and to crop the ground with the same subjects two years running, only the Peas must be put where the Cauliflowers were the previous season, and *vice versa*, then the third year follow with a whole crop, such as Potatoes. In kitchen gardens, owing to the disproportionate amount of space occupied by different crops, shifts of this kind have often to be resorted to when trenching cannot be done. Early borders have perhaps less respite as regards rotation than any other part of the garden. I am afraid to say how long such quarters have been annually cropped in some places with Cauliflowers, Peas, and Potatoes without even being once trenched, the roots of the fruit trees preventing the performance of that operation. Our practice is to devote about an equal portion of the border to the three vegetables just named, pushing the Peas on to the Potato ground of the previous year, the Cauliflowers on to the Pea ground, and the Potatoes on to the ground vacated by the Cauliflowers. Thus the round goes on year after year, and usually a snatch crop of Lettuces, Spinach, or something else is taken off the same border in autumn. Such hard-worked ground must, of course, be liberally manured. It should also be limed frequently, and fresh loam and refuse soil from the potting-shed are excellent fertilizers. I have once or twice within the last dozen years even wheeled the top spit off altogether to any quarter of the garden where the soil was heaviest, wheeling as much back again from the quarter in question to the border, a change which I have in every instance found to be highly beneficial to both quarters of the ground.

In cropping kitchen garden ground, whether rotation is strictly followed or not, it is a good and almost necessary practice to trench a portion every year, particularly if manure be scarce. In my case the supply, though tolerably liberal, is distributed over a large extent of ground; consequently I cannot afford to apply it to trenched ground, which is usually that which has been heaviest cropped. For this purpose I trench in the whole of the old Broccoli, Cabbage, and green stocks, seeding Spinach, Pea haulm, Potato tops, &c. Such material takes a long time to decay, but it turns up at the end of two or three years in the form of well-rotted mould. In some gardens it is the custom to bury immense quantities of long litter and other rough manure in trenching, but I never could see the utility of such a practice. Manure so applied is of little or no service to the crops, for it is too deeply buried, and lies in the form of a thin layer at the bottom of the trench, so that the roots of the plants cannot avail themselves of it. I had the curiosity not long ago to examine a section of the ground into which a large quantity of rough vegetable refuse had been trenched some years before, and found that a thin seam, less than ½ in. in thickness, represented the loads of rubbish which the men had to tread in with their feet in order to get it covered. Of course, such rough material as old vegetable crops cannot well be used in any other way, but with stable litter it is preferable to half-rot it in the heap and dig it into the ground just before the crops are planted, say when the winter digging is done. In spring it turns up with the fork in a disintegrated condition, and can be mixed with the soil in a proper manner. CHEF.

Princess of Wales Capsicums.—On visiting the gardens at Raby Castle last week I was particularly struck with the effect produced by Mr. Westcott's new Capsicum, Princess of Wales, the result of a cross between Prince of Wales and Yellow Gem. It has the habit of the former and fruit of the latter, and possesses a stronger constitution than that of either of its parents. It is covered with foliage from the pots upwards, and in some cases the pots are literally hidden with dark, glossy green leaves. It is highly esteemed at Raby as a table plant, and when used for that purpose it sometimes requires stakes to enable it to uphold its weight of fruit. Of the latter, single plants often furnish as many as forty each, as large as a Green Gage Plum, of a bright lemon colour, and polished as if varnished. Rows of this, as I saw them at Raby, have a truly ornamental appearance; and during the dull months this Capsicum will doubtless play an important part as a decorative conservatory plant. It is perfectly distinct from its parents, and in my opinion one of the best of all the Capsicums for decorative purposes; while for pickling, where colour is no objection, it is well suited.—J. HUNTER, *Lambton Castle.*

Hybridization of the Potato.—"A. D.'s" interesting remarks on this subject (see p. 417) will, it is to be hoped, induce many to try experiments in raising new varieties, especially as respects disease-resisting kinds belonging to the red-skinned section. At the present time some varieties here are proof against the fungus, at least as regards the foliage, and they belong to the kinds having red, leathery skins and strong, woody haulms, such as Millett's Manifold Scarlet Prolific, and some strong-growing seedlings raised here from a cross between Brownell's Vermont Beauty and Scarlet Prolific. I made Scarlet Prolific the seed-bearing parent, and managed to get some pollen-tubes off Brownell's Vermont Beauty before its flowers dropped, and I suppose have effected a cross, for the seedlings from two of the berries crossed are most diverse in the colours and shape of the young tubers. The seed was sown in pots in a frame in February, 1875, and when the young plants were large enough they were planted singly in small pots and kept growing in the frame until they were planted out on a south border in June. On raising them in October of the same year, the small tubers showed many varieties, some being Kidney, pebble, and round-shaped with their colours purple, rose, red, and some nearly black. Some of the varieties had short haulm and ripened early, and these I have principally saved for another year's trial, for on raising them lately after another year's growth they now show their cropping qualities and shape better. Some four or five kinds, strong growers, like Scarlet Prolific, with red skins, I shall likewise save for another year's trial, to see if they turn out disease-proof should it be prevalent next year, and likewise endeavour to find if they will prove better for table use than that variety.—WILLIAM TILLERY, *Welbeck.*

Antiquity of the Tomato.—Several interesting statements are made by "Science Gossip," showing the length of time the Tomato has been known in gardens. Galen, who lived in the second century, uses the name Lycopersicum, but it is not known to what plant he alludes; an Italian writer, in 1561, however, thinks Galen meant the Tomato. Dodoens, a Dutch botanist, describes it as grown in his time (in 1583), and as eaten dressed with pepper, vinegar, and oil. Gerard mentions it in his "Herbal" in 1597, and calls it Pomum amoris or Love Apple, and describes red and yellow-fruited sorts. Parkinson, in 1656, says it is cultivated only for curiosity, and for the "amorous aspect or beauty of the fruit." A century afterwards Miller states it was used in soups. About the year 1825 we remember its extensive use on the table, cooked and uncooked. In France and Italy there are whole fields devoted to the cultivation of the Tomato; and so great is the demand for it in some parts of the latter country, that there is scarcely a dinner served up in which it does not in some way or other form a part.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Large Potato Yield.—Seeing so much about Potato produce in THE GARDEN last year I was tempted to make a trial with Snowflake. I got 4 lb. of that variety, from which I made 24½ sets, and from these I dug 33 stone of first-rate tubers.—J. B., *Boden Park, Co. Dublin.*

Early Snow-ball Cauliflower.—From seed sown early in July I have this perfect little Cauliflower now ready for cutting, and no variety could be earlier in arriving at maturity. It is dwarf, compact, and the heads very solid and almost snow-white. For a gentleman's table no form could be better for dishing up, and it is as soft as marrow. Seed of this kind may be sown for succession three or four times in the year, and it can be planted out much more closely together than the larger sorts. Tried during the past year at Chiswick, the Early Snow-ball Cauliflower proved to be one of the earliest, and the best type of its kind. The variety came originally from Denmark, where it is largely cultivated.—D.

THE INDOOR GARDEN.

THE ALMOND-SCENTED ODONTOGLOSSUM.

(O. MADRENSE).

THIS is undoubtedly one of the most distinct and handsome of all the species of a deservedly popular genus of cool-growing Orchids. It was introduced to this country in 1874, and flowered in November of that year in one or two collections nearly simultaneously. It was first exhibited by the Rev. J. B. Norman, of Whitchurch Rectory, Edgware, at South Kensington, about two years ago, on which occasion a first-class certificate was awarded to it as a plant well deserving of cultivation. It is worthy of note, however, that it was exhibited and certificated under the name of Odontoglossum maxillare, but its correct name is O. madrense. O. maxillare of Lindley is a membranous-flowered plant nearly related to the O. Rossi, O. membranaceum, or O. Ehrenbergi group, whereas the plant in question is closely related to O. cordatum and O. maculatum of Lindley. It is figured

Odontoglossum madrense.

in the "Botanical Magazine" for 1875, t. 6144, under the name of O. maxillare. Its pseudo-bulbs are somewhat ovoid, but longer than is generally the case in this section of the genus, each bulb being two-leaved. The flower-spikes bear from five to six snow-white flowers of wax-like—indeed almost leathery—texture, both sepals and petals being blotched with clear chocolate-purple at the base. The lip is cordate, having a bi-lobed crest, and is blotched with lemon-yellow and mottled with orange. Each flower measures 2 in. in diameter. The accompanying illustration was made in Messrs. Veitch's collection at Chelsea, where its deliciously Almond-scented flowers lasted from six to seven weeks as fresh as when they first opened. F. W. B.

VIOLETS FOR LATE BLOOMING.

EVERY one is so fond of Violets that special preparation should now be made for having a good supply of them during the early months of the year—a season in which they are most appreciated. Plants for that purpose should now be got into the frames in which it is intended to winter them before their leaves become affected by frost, otherwise they are apt to damp off when confined under glass. The pit or frame should face due south, so as to get the full benefit of all sunlight; and, in order to secure a gentle, lasting bottom-heat, a thick bed of thoroughly sweetened fermenting materials should be made up on which to plant them. Nothing answers so well for this purpose as a mixture of tan and leaves, as it affords a more enduring heat than any other material, and is not so likely to settle after the manner of loose strawy manure, which sinks the plants too far from the light. In preparing the material to form the hot-bed, whatever is used for the purpose should be thoroughly incorporated by being turned over four or five times with a day's intermission between each turning, by which means all the rank steam will be driven out, and the subsequent heat will become less violent and more enduring. If ordinary garden frames be used, it is much the best plan to have a few faggots laid first for a foundation on which to build the bed, as then a lining can be added at any time during the winter, and the heat renewed at pleasure. Should the faggots be used, it will not be necessary to lay any great quantity of fermenting material upon them, but just sufficient to afford a small amount of heat to give them a start, after which the linings can be added whenever required, and renewed by some fresh manure, as the temperature of the bed decreases and renders such a course desirable. Beds made up in this way are much more serviceable than when formed of a solid body of fermenting material, and, on account of being more under command, and having less bulk, are not so liable to settle. In lifting the plants, they should be taken up with good balls of earth attached, in order to preserve their fibrous roots as much as possible, and prevent the plants from suffering any check in removal. The pit or frame having been properly prepared by being well trodden, the surface of the fermenting material should be covered with 6 in. or 8 in. of rotten leaves, and on these a mixture of the same and loam in about equal proportions. The plants should be placed in rows at about 6 in. apart, or just far enough for the leaves of each to stand clear of the other. Press the soil firmly around them, and give a good watering to settle it well about their roots; keep the lights close for a few days to draw up the heat and give them a start, after which they should have plenty of air both night and day, whenever the weather is favourable. Damp is the most troublesome antagonist with which to contend in cultivating Violets in pits and frames during the winter, especially when the weather is severe and they have to remain covered for a few days. The best remedy for this is to shake some very dry silver sand over them, which arrests it immediately; charcoal dust, crag, chaff, fine cocoa fibre, or indeed almost any fresh, dry, absorbent material will likewise have the same effect, although the former material is the most effective. Before either is put on, the plants should be carefully examined, and any decaying leaves removed, as well as a slight portion of the surface soil scraped lightly off, which will sweeten the air of the frame and check any further tendency to damp. Violets in frames require close watching to keep them free from woodlice and slugs, that feed on the flower-buds to such an extent as to spoil or disfigure the greater part. A few flower-pots containing a boiled Potato in each, and a wisp of hay, form very seductive traps for the woodlice; or a small trap of bran is equally enticing to slugs, but they should be looked for at the bait late at night and destroyed. Should green fly attack them, the best remedy is a slight fumigation with Tobacco, repeated for two or three nights successively; but it must be applied with caution, or it will damage the leaves. Violets are coming so much out of their ordinary course, owing to the warm, moist autumn, that it is to be feared there will be a scarcity in spring, especially as the great heat and excessive dryness that prevailed during July and August caused such a check to the plants, many of which appear unable to bloom at all. The Neapolitan, although the most tender, appears to be still the greatest favourite for growing under glass; while The Czar still holds its own as the best and strongest single, although as regards fragrance few equal the old single Russian. J. S.

Propagation of Bedding Calceolarias.—For some years past we have never put in our Calceolaria cuttings earlier than the first week in November, and we find them become as good plants in spring as those put in much earlier. Our practice may not differ much from that of others, but I may mention, for the benefit of your amateur readers, that we begin by placing a layer of good loam mixed with manure at the bottom of a cold frame to the depth of 8

in. or 10 in., and over this 2 in. of sandy soil or pure sand; the whole is then watered and allowed to stand for a day, when the cuttings are taken from the plants, selecting the hardiest-looking young shoots, and they are dibbled in at 1½ in. or 2 in. apart. The sashes are put on immediately the cuttings are in, and no water is given until they are rooted, when they are watered thoroughly, and no more is generally required until spring is well advanced. The sashes are not removed until they are rooted; afterwards air is given on all fine days. During severe frost the frame is covered with straw or mats, and this protection is not removed until the weather becomes milder. About the end of March the young plants are transplanted into another frame about 6 in. apart, and they always develop into fine, dwarf, bushy subjects for planting out in May.—H.

LATE PROPAGATION OF BEDDING PLANTS.

Why, it may be asked, defer the propagation of stock till late in the season? The answer is, with regard to Pelargoniums and some other plants, that to take thousands of cuttings from the beds in July or August spoils the display of flowers to a serious extent, thereby partially defeating the object of growing them, while in other subjects, good cuttings can often not be procured till late in the season; besides, it is never too late to supplement the supply by propagating additional stock when the beds are cleared in autumn.

Pelargoniums.—All varieties of these, even the most delicate, strike (from cuttings) better out-of-doors in pans and boxes than anywhere else, up to the middle or end of August, according to the locality—in other words, while it is still warm enough to promote free growth. We can remember when pits with bottom-heat were employed for the purpose; but the demand for bedding plants taught us a few good lessons in some things, and one was to strike Pelargoniums in the open air. When the Tricolors came out, much unnecessary coddling was practised by gardeners to increase their stock, but it was soon found out in this case also that they had by far the best chance in the open ground. After the end of August, however, or earlier, cold nights and a decreasing temperature tell their tale, and Pelargoniums, especially the variegated kinds, rot off rather than root, and to take them from the beds or borders at that season—September, we shall say—is robbing to no purpose. I have always two seasons of propagation—early in August and the end of October; what is not obtainable at the former period I take at the latter, by which time the display is over, and the beds nearly ready for clearing, and the cuttings usually strike as well as in August. My practice is, however, different. The cuttings, of tolerable size, are divested of all their leaves but two or three at the top—much foliage causes damping—inserted in 6 in. pots, and plunged in a pit within 1 ft. of the glass, where they can have a steady bottom-heat of 80° or 85°, and a rather dry top-heat of from 70° to 80°. They are well watered when put in, but not again, unless absolutely necessary, which is seldom the case so late in the season. In two or three weeks the cuttings root, and as soon as they are fairly established they are lifted out of the plunging material and stored along with the earlier-struck batches throughout the winter, the object being to keep the plants as undisturbed as possible till potting time comes round in spring. I have propagated stock on till December in this way; but the sooner the work is completed after the middle of October the greater the success. Late-struck Pelargoniums are just as good as those which are struck at the usual time for bedding purposes, and far superior to spring-struck plants for flowering; the fault of the latter is their inclination to produce wood instead of flowers. The little bit of old wood attached to an autumn-struck plant undoubtedly predisposes to a flowering habit.

Lobelia.—Owing to the late dry weather, Lobelias were quite destitute of growth fit for cuttings in August; hence late propagation has been a necessity in their case this season. When cuttings fail, seed is always available, and a good strain may be secured by selecting a few of the densest-habited plants, and those that produce the greatest number of flowers; but it is only by cuttings that we can get plants of uniform habit and colour, so useful for neat edgings, and with which seedlings cannot for an instant be compared. At present Lobelias are a mass of young and tender growth, thanks to the moist weather after the drought, and cuttings are abundant, and will yet strike readily with rather sharp treatment. A hot-bed which can be maintained steadily at from 75° to 80° should be prepared for them, and they should be plunged within 6 in. of the glass. A good light is of the utmost consequence to the Lobelia; means for keeping the top-heat at from 65° to 80° must also be provided. Cuttings should be made of the tenderest shoots, three or four joints long, and, as they must remain in their cutting pots—it being too late to pot off now—a layer of light, rich soil should be placed below the top layer of fine sand and leaf-mould in which the cuttings are inserted. One good watering with a fine rose will be necessary when the cuttings are put in, but afterwards water must be sparingly given, though more freely than to Pelargoniums. I am, of course, pointing out the conditions which best suit the different subjects; but when it is necessary to use the same frame for all, as is frequently the case, a kind of compromise must be effected in the matter of temperature, &c. Hot-beds are generally warmest in the centre and get colder towards the sides, so that such a compromise is quite practicable.

Centaurea.—This almost indispensable ornamental-foliaged bedder is frequently raised from seed, which should be sown now—if not done already—in a smart heat, and the young plants should be potted and pushed on in a genial temperature till about 4 in. or 5 in. high, and afterwards brought on in a cool frame till wanted next year. Some prefer to propagate it from cuttings, however, for the sake of having neater plants. The cuttings should be detached with care (because the leaves break easily), and cut at a joint just a little above the heel. The leaves should then be tied up to keep them erect, and each cutting should be inserted singly in a 60-sized pot and in a compost of sand and leaf-mould in equal quantities, and plunged in a bed of the same temperature as recommended for Pelargoniums, and treated otherwise about the same. Damping off is most to be feared with the Centaurea, but at one time we used to strike large quantities about this season and later.

Gazania.—This plant strikes freely in a cold frame in August, but at this season it requires bottom-heat. Spring-struck plants are almost worthless for flowering purposes, unless struck very early; hence it is advisable to put in the stock in autumn, and let them stand in their cutting-pots till potting-off time in spring. Such plants are large, and come into flower when put out in May; whereas, when they are topped for a spring batch, both lots are small and late. Short young tops should be used for cuttings, and they may be inserted pretty thickly in the cutting-pots, and treated otherwise like the Alyssum and Lobelia. When fairly established, they must just be protected from frost, and kept in dry, airy quarters. If kept warm they grow too much, and are poor, lanky specimens in spring that will hardly bear handling; cool treatment keeps them short and sturdy.

Tropæolums.—The early and free-flowering habit of the Tropæolum has made it a popular bedder and border plant, but it is one of the very worst subjects to keep through the winter. Cuttings of the tender parts are yet to be had, and they will require a bottom-heat of 85° and a stove temperature, but not much moisture. A temperature suitable for the generality of bedding plants in winter is fatal to them; they must be kept growing slowly if they are to survive and afford cuttings in spring. An intermediate house or stove, and half near the glass, is the best place for them, and they must be watered sparingly.

Calceolarias.—These are much better propagated late than early. The plants are a dense mass of young growth just now, just in condition for taking off. The softest shoots only should be used, and they should be dibbled in thickly in a shallow frame placed on a south border, away from artificial heat of any kind; 4 in. of sand and leaf-mould in equal quantities, and laid on a hard, well-drained bottom, will suit them well. The cuttings should be dibbled in as fast as they are made, and kept close, and only shaded to prevent them from flagging, but shading is hardly ever necessary at this season of the year. When struck, air may be given freely on all favourable occasions.

With regard to other things belonging to the soft-wooded bedding class, it may be sufficient to state that, as a rule, it is yet time to strike in heat all those subjects from which young growing shoots can be procured, but we have named the most important of them.

Succulent Plants.—Cuttings of all the bedding Echeverias, Sempervivums, Pachyphytums, and other bedding succulents of similar habits, may yet be struck successfully. Tops and side-shoots should be inserted singly in small pots containing a light, sandy compost, and placed on a dry shelf in a store or intermediate house, and kept barely moist. When struck, they are better stored in some dry, cool structure where they will not be shaded. Chef.

Thalia dealbata.—I have been for years a grower of hardy aquatics at Bitton in a pond; here I grow them in tubs—a cider hogshead or claret cask cut in half; but neither at Bitton nor in this more southern climate can I grow Thalia dealbata; therefore I consider it is not a hardy plant. I have seen it in great beauty in France.—H. T. Ellacombe, *Clyst St. George, Devon.*

Rhododendron Duchess of Edinburgh.—This fine Rhododendron, now in good condition in Messrs. Veitch's Nursery, seems likely to prove a valuable decorative conservatory shrub. It is very floriferous—small plants of it producing large trusses of crimson-scarlet bloom from the points of every shoot.—S.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

The season has now arrived when flowers are scarce, and when, with the exception of Chrysanthemums and plants that have been in bloom for some months past, we have few to which special attention can be directed. Foremost amongst those that are still attractive may be mentioned two showy kinds of Monkshood, both of which continue to open their helmet-shaped blossoms in tolerable abundance; although the foliage of these, as well as that of many other plants, has to some extent become deprived of its freshness, yet the flowers, when seen in masses, amply make up for this deficiency, and thus forcibly point out the advantages to be derived from close planting. The bright orange-scarlet heads of Tritoma Uvaria are still strikingly conspicuous, as are also those of

Aster formosissimus.

many of the Asters, such as A. miser pendulus, A. laxus, A. carneus, A. diffusus, and A. azureus, the latter being, perhaps, the best of all the dwarf kinds now in bloom, its light and graceful habit, and its multitudes of bluish-white, Daisy-like flowers, rendering it especially attractive. Amongst the most noteworthy, yellow-flowering Composite plants now in bloom may be mentioned—Picridium tingitanum, Hieracium lasiophyllum, Chrysopsis villosa, Tagetes lucida, and Centauridium Drummondi, the newly-made growth of all of which is more or less furnished with bloom. The second crop of flowers of the Flaxes (Linum tauricum and L. campanulatum) may now be found in good condition, and although the plants themselves are not particularly handsome, yet their fresh spikes of bright yellow flowers are valuable in a cut state for vases or bouquets. Bright scarlet blooms of the double-flowered variety of Geum coccineum may still be gathered, as well as the pure white Alyssum-like flower of Stenia paniculata.

Alyssum maritimum.

Campanula garganica, and C. Barrelieri hirsuta, may still be seen in good condition at Tottenham, where Dianthus tataricus and Œnothera taraxacifolia may also be met with in bloom. The pink and white Daisy-like flowers of Erigeron mucronatum are very attractive, covering as they do dwarf, compact cushions of fresh green foliage. Fuchsia gracilis variegata is still an attractive and graceful-looking plant, its slender stems being thickly clothed with variegated foliage, and bent down by the weight of their clusters of crimson drops. Stray flowers of the sweet-scented, double-flowered white Lychnis, may still be found on strong established plants, as they may also be on stout stems of Pentstemon gentianoides. Salvia angustifolia may be seen in tolerably good condition at Kew, as well as Calceolaria Pavonii. Hellebores are beginning to flower freely, and on Potentilla collina may be found bright golden flowers issuing from amongst green tufts of small, Strawberry-like foliage; Zauschneria californica is also still in bloom on the rockwork at Kew. With this are associated Sedum Sieboldi and Saxifraga Fortunei, both of which are in good condition, the latter being especially attractive, bearing as it does a profusion of white flowers. There are likewise in bloom at Kew Loasa lateritia, Œnothera odorata, Cuphea Zamperi, and C. platycentra; indeed the last has been in flower for nearly four months, and still remains in good condition. Rich purple-white spotted blooms of Scabiosa atropurpurea may still be found in abundance, as may likewise the long red flowers of Polygonum filiforme. To these may be added the pretty Nemesia floribunda, Geum pyrenaicum, Anoda triangularis, and Callirhoe pedata, the latter being profusely covered with bright, rich, rosy-purple blossoms. There are few Composite flowers just now more effective than are the varieties of Calliopsis tinctoria, their rich dark scarlet and purple blossoms, sometimes tipped with golden-yellow, being abundantly produced on light slender stalks of fresh green foliage. Alyssum maritimum is also just now very pretty as seen in the form of small, compact cushions covered with pure white flower-heads. Fairly good spikes of the beautiful blue-flowered Delphiniums are still being produced from late-made growths, and various kinds of Colchicums and autumn Crocuses are still beautifully in bloom. Among hardy Heaths the following may be mentioned as being in flower, viz.:—Erica vulgaris pygmæa, E. alba rigida, E. mediterranea, and E. Allporti.

THE FRUIT GARDEN.

RASPBERRY PLANTING.

The Raspberry will succeed tolerably well in most garden soils, but it prefers a rather moist situation, and does not object to a little shade. The wild Raspberry is oftener found in the woods than anywhere else, and in somewhat damp situations, where it grows and fruits wonderfully. In the North I have gathered quarts of wild fruit every morning for the kitchen, long after the garden crops were over: this was in one of the wettest counties in the kingdom. In dry districts, and in well-drained or shallow soils, I have often found the plant abundant enough, but the canes were weak, and the fruit small and scarce. Where the Blackthorn grows there also thrives the Raspberry, and good crops of Sloes and Raspberries are as a rule found together. It takes some little time to establish a plantation, but much depends on culture. In hard, dry soils, both higher culture and mulchings are necessary to the production of good strong canes, at the end even of the second year after planting. In dry districts, and upon dry subsoils, deep culture is also needful, principally because deep soils retain the moisture longer; otherwise this is not so important, for the Raspberry is not a deep rooter. In fact, the roots are found in greatest abundance close to the surface of the soil, which accounts to some extent for the bad effects which drought has upon the fruit, and the good effects produced by mulching. If the ground be trenched previous to planting, any rough, light manure may be buried at the same time; but manure, to be immediately serviceable, should only be dug or forked in a spit deep. In rather heavy soils, decayed hotbed refuse, half-rotted stable manure, leaf-mould, or peat should be applied, but the first two are the best fertilisers, and suit the Raspberry well. In light soils cow manure, or that mixed with any of the above, is preferable.

In planting it must be considered whether the ground has to be cropped between the rows, in which case they would require to be 7 ft. or 8 ft. asunder at least; the practice is, however, a bad one and not to be recommended either for

economical or other reasons, so far as I could see. Neither vegetable crops nor Raspberries can be cultivated satisfactorily under such circumstances. Plan it as you like, the bushes must have a certain amount of space to thrive well, and it is desirable to let them have the ground to themselves even if a less extent be planted. Should this plan be adopted, the distance between the rows and the stools will depend upon the mode of training the canes. There are three principal methods of training the Raspberry, all very good, and worth describing here. The simplest plan is to tie each group of canes together in the middle with a strong band, and leave them to support themselves, which they will do well, and at the same time the tops will not be crowded together as they are when tied to a single stake, nor will the canes be crushed at the bottom; consequently they break the greater part of their buds, and bear pretty well from top to bottom, if sufficient space be allowed. The second plan is to place the canes 9 in. apart in the row, and train them to a horizontal rail placed about 4½ ft. or 5 ft. from the ground. This is a more troublesome method, but it is undoubtedly the way to get the most fruit from each cane, provided the rows are wide enough apart, and the young canes are thinned out in good time, in order that the bearing shoots may be shaded as little as possible. This is a favourite way with industrious cottage gardeners, and perhaps the heaviest crop of Raspberries I ever saw from one row were produced by a cottager in this way. The canes were about 7 ft. or 8 ft. high, and were furnished to the bottom, or nearly so. When either of the above plans is adopted, from 5 ft. to 6 ft. should be allowed between the rows: considerably less will do, but the rule is to allow a good cane's length, which admits the sun's rays to the bottoms of the bushes, thereby ensuring greater fertility. The third and best method consists in planting the rows 4 ft. apart, and to run north and south, allowing 6 ft. or 8 ft. between the stools, and tying half of the canes down to the right, and the other half to the left, to a stake placed half-way between the roots, and about 2 ft. high. In this way the canes from each stool meet at the stake, overlapping each other somewhat, in the form of an arch, and the young canes grow up between. By this arrangement the greatest amount of fruit can be got from a given space, for the canes bear nearly their entire length, the bending inducing a regular break from the top to the bottom; while the low method of training permits of the rows being planted much closer together than they would be by any other plan.

The sooner planting is proceeded with after this date the better, and it should at the latest be completed before the end of November. The rows and places being marked out according to the system of training to be adopted, the canes should be planted in groups of two or three together; only strong canes should be employed, and, as they must be cut down to the ground before growth commences in spring, they need not be tied or trained in any way. Some cut the canes down when they are planted; but I find considerably fewer blanks occur in spring when such work is deferred till about the beginning of February. Raspberry plantations are not so soon formed as plantations of Strawberries and some other fruits. After planting, the roots should be mulched 3 in. or 4 in. deep, and 2 ft. out from the stems, which will protect them from frost in winter and drought in summer. From this date till the end of the following season, stirring the ground between the rows and watering the plants well in dry weather will be all the attention they will need. Should they make good tall and stout canes the first season, they may be left and trained; but if weak, or only second-rate, it is better to cut them down again about the same time, and the second season they will produce good bearing canes. Once established, a plantation of Raspberries will last for many years with generous culture, which consists in applying rich top-dressings annually or biennially—avoiding digging among or disturbing the roots—mulching in summer, and removing weedy canes and thinning out to the best in good time. CHEF.

Madresfield Court Grape.—This is a most excellent Grape; although it does not succeed in the hands of some cultivators, I find it to be one of the best of the latest introductions. As an early forcer it is almost equal to the Black Hamburgh. In our second early Vinery I have two Vines of it at the coldest end grafted on the Hamburgh which first bloomed on January 13, the same day as the Hamburgh. I commenced cutting the latter on April 15, and the Madresfield Court on April 19. This is the third season of the Madresfield Court Grape. It sets well, and the berries swell evenly and are of a good colour with a fine bloom. The flavour is excellent; in fact, the Muscat flavour was more fully developed in those cut in April than in others cut at the end of June. As a late Grape, it is impatient of moisture, and is very liable to drop off, but in a dry, cool atmosphere, with all the berries thinned out of the centre of the bunch, it keeps well and retains its flavour. I, however, prefer it grafted on the Hamburgh, as on its own roots it is inclined to make gross wood, a defect which the Hamburgh stock seems to remedy. The wood ripens kindly and solidly. Gross feeding is a mistake with this Vine; in fact, it interferes with the permanency of all Vines.—JAMES SMITH, *Waterdale*.

—— "H. J. C." (p. 378) in speaking of this Grape being well grown at Bolton Hall, Yorkshire, I have no doubt touches the real cause of its not cracking when he states that the border is wholly inside. Where ripened in the autumn, and the border is altogether outside, unless protected from wet from the time it begins to ripen, I have generally seen it crack more or less; but when the roots are all inside, or part in and part out, with the inside border kept drier from the time that colouring commences, I have never seen it crack. To this cause, and not to anything particular in the nature of the soil, I have no doubt is attributable its not cracking in the instance mentioned by "H. J. C." It is undoubtedly one of the handsomest Grapes in existence, and as good in quality as in appearance; but how it obtained the character of being a late Grape appears to me unaccountable, for keep it will not. When ripe during the summer or early autumn, there being no disposition to mould, I have generally noticed that in a comparatively short time the berries assume the appearance of raisins. In many places where it had been rejected for cracking and its non-keeping properties, it is being re-introduced now that its suitability for ripening earlier in the season, its good looks and fine flavour have become fully known, and its requirements of a comparatively dry bed for the roots are better understood. When ripened early in the summer, even with the roots wholly outside, the drier condition of the soil and atmosphere generally prevents it from cracking. If from the first its true character had been established as that of a Grape requiring to be ripened early instead of late, there would have been no disappointment with it.—T. BAINES.

PLATE XLV.

THE CORNISH GILLIFLOWER APPLE.

Drawn by H. HYDE.

THIS, as most of our readers know, is by no means a new Apple; on the contrary, it was brought under the notice of the Royal Horticultural Society about the year 1813, and our reason for figuring it now is that it is supposed by good judges to be the finest-flavoured of all English Apples. We are indebted to the Hon. and Rev. J. T. Boscawen, Lamorran Rectory, Probus, for sending us specimens first of the fruit and then of the blossoms represented in the accompanying plate, and last, but not least, for the following interesting history of the Apple in question:—As far as I can remember (says Mr. Boscawen) a certificate was given to Sir C. Hawkins, of Trewithan, Cornwall, in the year 1822 or 1823 by the Horticultural Society of London for fruits of this Apple. Sir C. Hawkins found it in a cottage garden near Truro. It is my opinion that it is a seedling from a very old Cornish variety called the Spice Apple. There are two, if not three seedlings from it in Cornwall—one at Mr. Richard Bolitho's, in Penzance, which is earlier than the one I sent you, but not so good. I have heard of another, but can't say anything about it. The Apples I sent were from a graft of the original Apple at Trewithan, and therefore is the true Gilliflower, or July Flower, as it is sometimes called. The name, I believe, was given in consequence of its scent being like that of a Gilliflower Carnation. I have found the Apple easily cultivated, not only in Cornwall, but in the Midland Counties. One year when the crop failed in Cornwall, Apples were sent down here from Berkshire quite as fine, if not finer than those usually grown in Cornwall. This Apple likes an eastern aspect, and must be pruned carefully, as the blossom-buds are at the ends of the shoots. It keeps well, and is ripe about the end of November.

MY DIARY FOR SEVEN YEARS.

By W. DENNING.

November 6.—*Potting*—Several hundred plants of Selaginella, also some Odontoglossum citrosmum into very fibry peat; taking Miltonias off blocks and potting them. *Planting*—Crocuses in the flower garden; re-planting Daisies. *Miscellaneous*—Putting all scented Verbenas under greenhouse stage for stock, also double Wallflowers into 48-sized pots and placing them in frames; putting first Tulips into heat; placing a few Heliotropes into heat weekly, also all Bouvardias into a warm pit; sending in Beurré d'Aremberg Pears; making first Peach-house ready for forcing, manuring, and top-dressing it; taking out clay soil and substituting better material in the case of the Currant-tree wall border; digging ground for first sowing of Peas; pruning early Vines; raking up leaves for hot-beds, &c.; second house Beans in flower; gathering some Fir cones for seed; beginning to shut up early Peach-house earlier and leaving it open later, not letting heat get too high before doing so; preparing for frost by putting all fires on for first time, also in Orangery.

Nov. 7.—*Potting*—Sweetbriers; putting in Rhubarb for forcing; Taking up Dahlia roots, and putting them under greenhouse stage in not too dry a place. *Miscellaneous*—Tying up tree Mignonette; also creepers on screen walls; and 300 Lettuces in frames; putting lights over Strawberry plants in pots; putting litter round the Calceolaria pit; pruning Pear trees; keeping tree Carnations at about 50°. *Plants in flower*—Chrysanthemums, Salvia splendens, Erica gracilis autumnalis, Cytisus racemosus, and C. Attleanus, Epacris Eclipse, Tydæa splendens, Begonia parvifolia and incarnata, Tom Thumb Pelargonium, Primulas, Mignonette, Crimson Monthly Rose, Cinerarias, Lobelia splendens, and Monochætum ensifolium.

Nov. 8.—*Planting*—Standard Roses in flower garden; taking up blue Salvias for stock plants; taking out autumn Cucumbers to prepare for re-planting. *Miscellaneous*—Wiring Wallflower beds to keep off rabbits; putting hand-lights over early Lettuce; sending in Raspberries and Raby Castle Currants; stacking Carrots and Beet-root in dry sand or dry ashes; clearing out a pit for Asparagus forcing.

Nov. 9.—*Potting*—Herbaceous Calceolarias in good rough material, and placing them in well-crocked pots; a quantity of Sedum spectabile; also the Pleiones in one-third turfy loam, one-third turfy peat, and one-third leaf-soil, making the soil firm in the pots, as light potting nearly kills these Orchids. *Miscellaneous*—Taking up Gladioli; put in first batch of Seakale for forcing; getting all Cauliflower which is ready put into trenches; washing Gardenias; fumigating first Peach-house in case any fly should be present; cleaning marble statuary in pleasure grounds preparatory to covering it up for the winter; watering bedding material as seldom as possible; gathering Tomatoes from walls; also Fulmer Beans second crop; manuring vacant ground chiefly with garden refuse; placing manure on outside Peach border of first and second houses; cleaning out ice-house.

Nov. 10.—*Potting*—Lily of the Valley for forcing; also a large quantity of Narcissus. *Planting*—Gentiana acaulis and Pansies; plunging the most forward bulbs in tan, and keeping them at from 58° to 60° at night and 63° by day with air. *Miscellaneous*—Severe frost expected, therefore extra-covering Lettuces, Endive, Strawberries, Calceolarias, Chrysanthemums, and cold frames; getting all Fuchsias and Daturas under greenhouse stage; putting some hay over seed Potatoes; taking up untied Endive and putting it into a frame; examining Camellias again for scale; sending in Gansel's Bergamot Pears that have been put into Vinery for a day or two to fully ripen; putting manure into pit for Cucumber plants; making a pit ready for forcing Seakale; emptying a pit for forcing flowers; pruning first Hamburgh Vines and washing paint; cutting Ivy off top of wall to prevent its being broken down by heavy wind or snow; many plants of Odontoglossum Alexandræ showing flower-spikes; Chrysanthemums beginning to make a show.

Nov. 11.—Putting all baskets as much as possible over passages in Orchid-houses; placing Saccolabiums in warm end of East Indian house. *Miscellaneous*—Putting all young Heliotropes from pits into span-roofed house to keep them dwarf for Christmas; putting a little tan over potted Lily of the Valley and protecting all other plants in pots; hanging up in cellar all Cauliflower that is ready head downwards; gathering all Tomatoes and putting them into Vineries; getting leaves into pit ready for forcing Lily of the Valley; spawning third Mushroom-bed, first adding a little fresh soil; digging vacant ground; emptying two frames so as to have them ready for early Carrots; pruning trees in first Peach-house; pruning Raspberries begun; raking up leaves in wood, and cleaning up leaves in Arboretum and also in the rock garden; a good many Narcissi and Roman Hyacinths in flower; sprinkling Phalænopsis and East Indian houses three times daily, and other houses twice daily.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Watering.—By those who have only an imperfect knowledge of the cultivation of plants it is often supposed that any one is capable of giving them water, or in other words, of knowing when they require it, the too general impression with the uninitiated being that if a sufficient supply be given all must be right, and that the plants will go on and flourish. Yet it is a question if Amateurs in their first attempts at plant-growing do not kill greater numbers by the too free use of the watering pot than those who are neglectful on that point, more especially at this season of the year, when plants of all descriptions are not in an active condition. When a plant is placed with its roots in the open soil, or even when it is similarly situated in the bed of a conservatory, it is much less likely to suffer from either extreme of too much or too little water than when confined in a pot; for if the soil at any time have too much water applied it will more quickly drain off than it will from a pot, and the roots naturally keep more to the surface when they have room to spread out in a horizontal position, which renders them less likely to suffer if the soil happen to get too wet; on the other hand, if the soil become too dry, the roots, from the increased space allotted to them, have a better chance of extracting the moisture they require from the greater body of earth available; and lastly, the roots and the whole plant collectively are usually in a more robust, vigorous condition and less likely to succumb from any extreme of treatment to which they may be subjected; hence, the necessity of a closer attention to the watering of plants grown in pots. During the spring and summer, when growth is in active progress, if the water supply be short, most plants will exhibit their want of moisture by the flagging of the leaves and young shoots, and from which injury is not nearly so likely to result in the case of free-growing subjects as by any excess at this time of the year, particularly with those that make slow growth, and that have fine roots. For the inexperienced amateur the two latter characteristics, which generally accompany each other, will be one of the safest guides as to the quantity of water a plant requires to keep it in a healthy state. Heaths and slow-growing, hard-wooded plants may be taken as examples of the greatest impatience of excess, and the least requirement of water at any time of the year. Beginners are frequently tempted to purchase these, yet it would be much more advisable for them to confine their practice for a time to quick, free-growing plants until they have acquired the knowledge requisite to enable them to manage these before they undertake the more difficult subjects. Written or verbal instructions cannot do more than point to general practice in this most important operation, as not only will the quantity of water required by any particular species or variety of plant be in a great measure regulated by its more or less vigorous condition, but also the point of dryness which the soil should be allowed to attain before water is given, should be determined by the same conditions of growth in the plant. Yet, still some hints may be given that will enable amateurs to acquire the necessary knowledge in this matter by pointing out the greater or less requirements of water by plants during the autumn and winter.

Soft-wooded Plants.—Amongst those that need the soil moist at all times, even in winter, are Cinerarias; these, when well treated, make considerable growth at all seasons, and cannot bear to be dry for even a short period, it being a sure sign when the leaves flag that the plants have received injury. Calceolarias, both shrubby and herbaceous, come next in their requirements of water, especially the herbaceous kinds. Calceolarias and Cinerarias, in addition to a moist condition of the roots, revel in a humid atmosphere, and should never be placed on a dry surface, such as the front shelf of an ordinary greenhouse. Through the winter the best position for them is on a bed of ashes in a shallow pit, a slight distance below the aperture for the admission of air, so that it will in a measure pass over rather than come in direct contact with them. Where there is no alternative but to put them on shelves, it is well to have 1 in. of Moss spread on the shelves, which, if kept moist, will counteract the drying effects of the situation. The beautiful old Calla (Richardia) æthiopica needs to have the soil moist; although it is almost an aquatic, it is of such a hardy nature that it will bear to be completely dried up without fatal results, though, of course, it feels the effects of such treatment. Heliotropes, Petunias, Lobelias, Carnations, Salvias, Lachenalias, Vallotas, and Cyclamens do not require to have the soil kept quite so moist as the first-named plants, yet they should always receive water before being allowed to get quite dry. Lilies do not need much water in the winter, but though not making much progress in their tops at this season, the roots are actively at work, consequently the soil must never be without moisture, or they will receive a check that will seriously affect their flowering the ensuing year. The different sections of Pelargoniums vary considerably in their demand for water; the Zonals of all

colours and the bronze and white variegated-leaved kinds being mostly freer growers than the large-flowered sorts, the Fancies, and the Tricolors, must have the soil kept somewhat more moist, but those who have not yet acquired the knowledge of the exact condition of moisture these plants like had much better err by keeping them too dry than too wet, as the latter state will cause destruction of the roots, resulting in disease from which they will be slow to recover, whilst a moderate degree of dryness will not affect them to a greater extent than slightly stopping their growth. The above-mentioned more tender-rooted, slower-growing sections, particularly the Fancies and the weakest-growing varieties of the Tricolors, should never be watered during the winter, until the soil has got so dry that little moisture can be detected in it by pressing the fingers on the surface. There is a considerable difference in the strength of growth of the yellow-leaved varieties of Pelargoniums; the old Cloth of Gold, still retained by many, cannot do with much moisture in the soil through the winter; the freer growers will bear somewhat more. All the varieties of Kalosanthes must be watered with caution until they begin to move freely in spring, when they will need more; during the autumn and winter do not apply any until the soil has got almost dry, yet water must not be withheld too long or the under leaves will shrivel up and die, which detracts much from the appearance of the plants, yet does not usually interfere with their flowering.

Hard-wooded Plants.—Amongst these Camellias require more water at all seasons than the generality usually grown. If ever the soil be allowed to get dry from the time the buds have attained a considerable size until they expand, it results in their falling off. Those who have not had experience in the cultivation of Camellias frequently do not attribute the buds thus dropping to the true cause, as it often happens that they do not begin to come off for one, or even two months, after the injury has been inflicted. The same result will follow if the atmosphere be too dry, but injury from this cause mostly shows itself much sooner than in the case of plants having been dry at the roots. This disaster is most commonly brought about by too much fire-heat, and by neglecting to provide means for supplying the atmosphere with the requisite moisture. The useful autumn-flowering Veronicas require the soil always kept moderately moist, especially whilst they are blooming, or the flowers will be liable to drop. Cytisus racemosus, Acacias, Neriums, Myrtles, Statices, greenhouse Rhododendrons, Lapagerias, Lasiandras, Monochætums, Croweas, Clianthus puniceus, Cassia corymbosa, and Abutilons, are plants that should never be allowed to get so dry as the more tender kinds; they are free growers, and equally free in producing flowers, afford great variety, and are altogether much more suitable for those to grow whose experience is limited than plants that are of more difficult management. Azaleas, although fine-rooted subjects, should never be permitted to become so dry as with some cultivators. The plants whence the present race of hybrids now in general cultivation have sprung, grow principally in the humid hill-regions of India, and, although much more tenacious of life than the majority of hard-wooded subjects, they are seriously injured if kept too dry at the roots. The exquisitely-scented Daphne indica, held in universal estimation for its perfume, is often killed by over-watering; except during the season when it is making growth, it should never be watered until the soil has got almost dry. Oranges, especially the small-growing Otaheite variety, need careful watering in the winter, when its roots are at rest. Fuchsias are often completely dried off during the winter, but in the case of old plants that are cut back in the autumn after flowering, they are much better if the soil be kept very nearly dry. In all cases, except with subjects the tops of which die completely down, or nearly so, when water is applied, no more should be given than will moisten the whole moderately in the winter season; to pour water to a plant until the soil is saturated during the winter, when at rest more or less, is as bad a treatment as can possibly be followed, especially if light potting (the bane of plant culture) have been adopted, as in this case the soil will obviously hold water like a sponge. When a plant of any description is growing in a pot comparatively small, it should never be so dry before water is given as if it had a larger body of soil surrounding its roots.

Flower Garden.

Clear, starlight nights, with the sting of frost in the air, begin to remind cultivators of the approach of winter, and that it is high time to take up or afford the necessary protection to any plants of a half-hardy nature it may be desirable to save. In favoured localities the beautiful Chamærops Fortunei, Dracæna indivisa, Phormium tenax, Aralia papyrifera, and many others of a similar character may be trusted out if they be provided with a good coat of dry leaves or Fern made secure around the stem and collar of the plants so as to preserve the most vital part from frost. Sheltered in this way it is surprising what an amount of cold many plants will endure if the soil in which they are growing be not of a wet, retentive nature. Where any doubt exists as to the safety of any choice specimens of the above, they should be lifted at once with as large a ball of earth attached as convenient, and placed in any spare cool house, or light, dry shed, from which light is excluded. Aralia papyrifera may be wintered in almost any out-of-the-way place, as it matters little about the loss of its leaves so long as the stems are preserved, the crowns of which start again in the spring and appear all the more vigorous for the rest they have received. Aralia Sieboldi is perfectly hardy, and one of the most strikingly ornamental plants for the centres of beds, the backs of shrubby borders, or for grouping amongst others in the sub-tropical garden. Now that this kind of embellishment is so much in vogue it is very desirable to introduce as many hardy plants as possible so as to lessen the labour and expense attendant on raising a fresh supply each year, or the inconvenience of having to take up valuable house-room to winter them. Cannas are still looking as well as at any time during the year as far as their foliage is concerned, and may be left to display their beauty till cut down by the frost, when they can be lifted and stored in any dry shed, or left in the ground if covered with half-rotten leaves, or any other safe non-conducting material that will preserve them from frost. In well-drained beds, treated in this way, they become much stronger than they do if dug up now and replanted in the spring, as they lose many of their large, fleshy roots in the drying they undergo when stored in the winter. Echeveria secunda glauca, now so much used for bedding purposes, should be laid in thickly on steep, sloping banks, under south walls or other sheltered positions, where, with a mat thrown over them during severe frosty weather, they will be found to winter safely; or they may be laid in under any old spare light just to keep the crowns dry, in which state they will remain quite hardy. Gladioli, being now ripe, should be lifted and laid on the floor of a damp shed or cellar, or some other position where the corms are not likely to become sufficiently dry as to cause them to shrivel, for when that takes place, they lose much of their strength and vigour, and not unfrequently die altogether. If the tops be still green, they should be allowed to remain till they fall off naturally, and not be cut away, as is sometimes done when the bulbs are dug up. In situations where the soil is of a light sandy nature, Gladioli do best left in the ground undisturbed, as also that gem among autumn-blooming plants, the old Salvia patens, which has been finer this year than I ever remember seeing, the late rains and exceptionally warm weather having caused it to flower in the most profuse manner, which is all the more striking on account of the woe-begone appearance most of the bedding plants have long since assumed, and with which this beautiful Salvia now shows up in pleasing contrast. Planted thinly among the spotted-leaved Abutilon, or any other variegated plant of similar character that will last well into the autumn, it has a pleasing effect, and for growing in clumps in the mixed border is quite unsurpassed. Among hardy herbaceous plants flowering at this season, one of the most admired here is Trycirtis hirta, which in the curious markings and formation of its blooms, bears a great resemblance to some of the choice Orchids, and is most valuable for cutting, in which state it lasts a long time in condition. To grow it well it requires a deep, rich soil, made moderately light by working in some leaf-mould or peat, and a little sand to keep it open and porous. As a pot plant for greenhouse decoration it is equally useful, and owing to its late-blooming habit, and the length of time it may be preserved under glass, it fully deserves all the attention that can be bestowed upon it for the above purpose. No time should now be lost in getting in all bulbous-rooted plants, such as Hyacinths, Tulips, Scillas, Narcissus, and other spring-blooming varieties, and frequently the dead or decaying stems should be removed, that the whole may present a neat, orderly appearance, which in some measure will make up for the absence of flowers. The late rains have rendered lawns in a soft, spongy condition, and as a remedy for this the roller should be resorted to on every available opportunity, as by its frequent use not only is the surface rendered smooth and firm, but the quality and mixture of the Grass are both considerably improved, and the labour of mowing thereby made much easier.

Pits and Frames.—Damp will now be the principal foe to guard against where plants have to be wintered in the above-named structures, and in order to ward this off, they should be freely exposed to the air during the daytime, whenever the weather is at all favourable, either by tilting the lights or withdrawing them altogether. With a well-drained, dry bottom of coal ashes, raised somewhat above the general level, such plants as Cinerarias, shrubby Calceolarias, Lachenalias, and many varieties of bedding plants may be kept in vigorous health if properly protected from frost by a good covering of dry Fern and litter, made secure by being covered with a tarpaulin or shutters.—J. Sheppard, *Woolverstone Park.*

Orchids.

As this month advances numbers of Orchids will be found to have completed their growth, and consequently great vigilance will be required on the part of the cultivator to select such and separate them from the growing plants, placing them in a suitable temperature where they may pass their season of rest. This is one of the most important matters connected with Orchid culture, and one which is often neglected until it is too late, and the growths, which should not have started until spring, have been excited into growth, and that at a time when they cannot develop themselves; consequently, after that the plant has to depend on the weaker back eyes. If the plants at rest be allowed to remain mixed up with those which are growing they will probably receive water when they should not get any, and if water be not actually given them even the moisture from plants in growth will be injurious to them. If a proper resting season in a drier atmosphere, accompanied by a very restricted supply of water, be not given to the plants, their chances of flowering in their proper seasons will be but slight; the roots also, even of those which will bear any amount of water while growing, invariably decay when too much is applied to them during their season of rest. This is particularly the case with many varieties of Cattleya, Lælia, and Oncidium. In selecting the plants for resting, each should be regarded separately; therefore, all the plants of any species should not be rested merely because one or two of them are in a condition to submit to that treatment, or because it is their proper resting season—some plants may require to be kept growing longer than others of the same species for many reasons, such as being retarded in their growth by profuse flowering or by being kept back for exhibition; such plants should be kept growing until their growth is finished regardless of the season. The ventilation and the heating apparatus will require constant care, in order to ensure a healthy and sufficiently warm atmosphere. Artificial heat should be regarded as a necessary evil to be judiciously used, the ill-effects of which are to be counterbalanced as far as possible by the admission of pure air. Where Orchid-houses are badly ventilated, or where ventilation is wholly neglected during the dull months of the year, it is a common thing to see the plants become sickly in the winter, recover in the summer, again fall into ill health, and gradually getting worse in spite of all the care bestowed on them in other particulars. The temperatures during November should be in the East India or warm house, from 65° to 70° by day, and 60° at night; Cattleya or intermediate house, from 60° to 65° by day, and 55° at night; Odontoglossum or cool house, from 55° to 60° by day, and 50° at night; the higher day temperatures being for sun-heat. In the early days of the month, particularly in houses containing many growing plants, these temperatures may be exceeded by 2° or 3°, gradually bringing them down to those recommended by the middle of the month. Those who have but one house should treat it as an intermediate one, and place the growing plants at the warmer, and the resting plants at the cooler end of it. —James O'Brien.

Indoor Fruit Department.

Vines.—Prune all Vines from which the leaves have fallen; remove all loose bark; wash clean with soft soap and water as hot as the hands will bear it; search every corner for insects, and place the Vines reserved for starting in position; wash well or paint the house; examine the drainage and borders, and see that all necessary for their welfare is completed. The inside border of the early Vinery, now ready for starting, should be covered with a bed of leaves and stable litter, turning it occasionally to make the ammonia available; use the syringe twice daily, and keep the temperature at 50° at night, increasing it with sun-heat during the day; where the borders are chambered and heated beneath, the heat should only be just sufficient to warm the pipes. After a growing season the roots will be found close to the pipes, attracted to them by the heat, if previously applied judiciously. Water well inside borders with tepid water about 80°, which operation is most essential in the first growth of the Vine. In cold weather never allow the pipes to give off that odour of heated air, which is so injurious to the Vine. Pot Vines, started into growth a few weeks ago, may have a night temperature of 55°, on the first appearance of the buds bursting 5° more will be necessary; if plunged in fermenting material, prevent its becoming too warm, as over-excitement often ruins the crops: take every advantage in shutting up during sunshine, for if a high temperature sufficient to their well-being can be maintained without fire so much the better for the Vines. Grapes now hanging should be looked over daily, and all bad berries removed on the first signs of decay; up to the present time the autumn has not been favourable for the preservation of Grapes. A drop of water should not be spilt, nor should plants requiring water be allowed to remain in the same house. Immediately before the fall of the leaf is the most precarious time for them. Where it becomes necessary to fill the houses with plants the Grapes should be cut with a portion of the wood and placed in bottles of water in which some charcoal has been put, in a room with a dry temperature of about 45°. Remove all foliage as soon as a tap of the hand causes it to drop; warm with fire-heat, and air well houses on fine days where fruit is hanging; keep ventilators closed in heavy, damp weather. Where Grapes are intended to hang through the winter, or where early forcing is to take place, outside borders should be protected by wooden shutters or other means that will allow the rain to run off.

Peaches.—From trees in early houses from which the foliage has dropped, prune and remove all old ties; wash well as directed for Vines; let all inside walls be properly whitewashed; paint pipes and houses if necessary, if not, clean thoroughly. Take away all the surface soil off the roots, re-place it with fresh soil and manure to the requisite height, both outside and inside, and protect the borders as recommended for Vines. Trees in late houses should have the assistance of a brush to remove those leaves that are ready to drop, and all young, green shoots attempting to grow should be at once displayed. Give a little fire-heat by day, and a free circulation of air to assist the wood in ripening. In tying-in all trees be careful not to lay them in too close as the result will be weak, unripened shoots.—J. Hunter, *Lambton Castle.*

Kitchen Garden.

Truly our climate is one of extremes, and one with which all our wits are required to cope. A few weeks ago we were all but dried up, now we are nearly swamped with water, and it is with the greatest difficulty that fruit or vegetables can be harvested in anything like good condition, but as sharp frosts will soon be upon us, even half an opportunity should be seized in order to get Potatoes, Onions, Carrots, or Beet, safely stored. As a consequence of the heavy rains a far too succulent growth is being made by Broccoli; and as a precautionary measure it may be necessary, especially in strong soils, to turn them gently over with a fork with the view of checking over-luxuriance, and making them better able to withstand the effects of the severe weather that may be in store for them. I do not approve of the plan of entirely lifting them and heeling them in with their heads to the north, for I never yet saw any good come of the practice, all being usually killed alike when a sharp winter has visited us, and, as a matter of course, the non-lifted or but partially disturbed plants produce the best seeds. By far the best preventive is not to plant out too soon, and in that way not give the plants the opportunity of getting too succulent. Look over Cauliflowers daily in order to protect the heads by bending the leaves over them, and should sharp frost set in lift and heel them in in any place of shelter, such as an open shed, orchard, or Peach house. Veitch's Autumn Giant still maintains its superiority over all others for the present season; it is just now in magnificent condition, and is a kind which everybody should grow. Brussels Sprouts will be all the better if a portion of the old leaves be taken off them now; there are always plenty of yellow half-decayed leaves that require removal, in order to let in light and air to the Sprouts. The same operation should be carried out in the case of Cabbages; all decaying matter should on fine days be collected and wheeled to the rubbish or manure heap, for after so much wet as we have had nothing gives off a more disagreeable smell than half-dead foliage. Asparagus beds may now also be cleared; the stems should be cut close to the ground line with a reaping-hook and the beds weeded. They should then have a liberal dressing of manure, but till the weather be fine and the ground drier for wheeling this operation should be deferred. Remove also the decayed stems from Seakale and Rhubarb, and if not required to be lifted for forcing, both will be the better for a dressing of manure and the ground dug at once. Weed—for hoeing is now useless—autumn-sown crops of Turnips, Carrots, Lettuce, and Spinach—this last should be finally thinned out. Lettuce, Cabbage, and Coleworts may now be planted, and a batch of each pricked out in some sheltered nook for spring planting. Every particle of vacant ground should be dug or trenched as soon as time permits, both for neatness sake and for pulverization. In wet weather examine root stores. Potatoes have gone very badly since they were dug, and will require frequent examination to save any of the later kinds. Beet and Carrots may also be layered in sand or dry soil; and Onions tied in strings, or laid thinly on shelves. In the forcing department, sow French Beans fortnightly in quantity according to demand. Encourage free growth in the case of those in frames by keeping a little extra fire by night, so as to admit of ventilation being given at the same period. See that all kinds of herbs in request during the winter are now potted and introduced into the forcing-house—Tarragon, Mint, Basil, and Fennel—all are frequently in request in most establishments, and

there is no difficulty about getting them when once potted. Mustard and Cress should be sown weekly. A small quantity of Seakale and Rhubarb may now be started, but only a small batch, as the roots are not yet in condition for forcing, and the produce will only be second-rate. Gather Tomatoes as soon as they are ripe, in order to prevent the plants from becoming exhausted, and if growing in pots feed them liberally. Any partially ripe fruit now out-of-doors will ripen off perfectly if cut and taken into the forcing-house.—W. WILDSMITH, *Heckfield*.

TREES AND SHRUBS.

HARDY SHRUBBY ST. JOHN'S WORTS.

THE hardy, shrubby kinds of Hypericum grow freely in any common garden soil, flower abundantly in the autumn, and are more or less evergreen.

The Prolific St. John's Wort (Hypericum prolificum, *L.*).—This forms a very ornamental, compact, dense, sub-evergreen bush, from 3 ft. to 4 ft. high, loaded with bright golden flowers from July to September; it is a native of Virginia and Pennsylvania. It grows in any loamy soil, but requires a rather dry situation, and makes an excellent shrub for the front of shrubberies or for planting on rock-work, and merits a place in every choice collection of shrubs. The leaves are rather small, opposite, linear-lanceolate, entire and revolute on the margins, stalked, light shining green, and full of pellucid dots; stems round, branchlets angular, four-sided, forked, and very numerous; flowers five-petaled, bright yellow, not very large, and produced in few-flowered, axillary, and terminal corymbs, in great abundance; fruit a shining, smooth, membranous capsule, of a reddish colour; it is generally known in gardens under the name of H. Kalmianum.

The Nepaul St. John's Wort (Hypericum oblongifolium, *Lindley*).—This is a handsome, showy, slender-branching evergreen shrub, from 2 ft. to 4 ft. high. Native of mountains of Nepaul. It is somewhat tender in severe winters about London; but on a dry soil and if the weather be mild it would stand tolerably well; the leaves are oblong or elliptic-lanceolate, smooth, rather crowded towards the ends of the branchlets, full of pellucid dots, and with the edges a little revolute; the stems are round, branchlets slender, and a little divided; flowers rather large, of a fine, waxy texture, terminal, somewhat corymbose, of a deep golden yellow, and produced from July to September. It is frequently named H. nepalense in collections.

The Urala St. John's Wort (Hypericum uralum, *Don*).—This is a neat, slender shrub, 2 ft. or 3 ft. high, which flowers from July to September, and is a native of Nepaul, where, in the Newar language, it is called "Urala Swa." It is found on the tops of mountains in Nepaul; is somewhat tender about London; but in mild seasons and on a dry soil, particularly on rockwork, it stands most winters, and, although sometimes cut down to the ground, it again springs up the following season, and flowers freely in the autumn; the leaves are rather small, elliptic, entirely smooth, shining on the upper surface, pale beneath, perforated with transparent dots, and almost stalkless; branches slender, somewhat compressed and two-edged; flowers rather small, and in terminal corymbose heads, and of a bright golden colour.

The Tall St. John's Wort (Hypericum elatum, *Aiton*).—This is a strong, robust, sub-evergreen, suffruticose bush, native of North America, and grows 4 ft. or 5 ft. high, and flowers in July and August. It is a common plant in gardens, and only fit for planting in rough places or places where there is plenty of room, as it spreads rapidly by the extension of its underground shoots. The leaves are rather large, oblong-ovate, quite entire, and somewhat revolute; the flowers are large, bright yellow, and in terminal corymbs of few-flowered heads.

The Goat-scented St. John's Wort (Hypericum hircinum, *L.*).—This is a slender, dwarf, deciduous or sub-deciduous shrub, 2 ft. or 3 ft. high, and is a native of the south of Europe and the sea coast of Spain. It flowers from July to September, grows freely in any common garden soil, and has a very disagreeable smell when bruised; the leaves are rather small, ovate-lanceolate, and glandular on the margins; the flowers are somewhat small, bright yellow, and are produced in terminal, loose, few-flowered heads.

There is a much smaller and distinct variety of this kind, which seldom exceeds 18 in. in height, and smaller in all its parts. It is named H. hircinum minus.

The Large-calyxed St. John's Wort (Hypericum calycinum, *L.*).—This is a well-known, native, creeping, evergreen shrub, with large yellow flowers, and well suited for planting in shady places. GEORGE GORDON.

PRICES OF TIMBER.

INFORMATION as to the value of home-grown timber is at the present time of interest and importance to landowners and planters; I give the prices obtainable for the different kinds of timber grown on this estate. I should mention that the distance from a railway station is from three to five miles, and that the nearest market for pitwood is from ten to twelve miles distant. The home timber trade is dull and depressed at present, last year's prices being scarcely obtainable, particularly in the case of second-rate timber. Copse-grown Ash is in most request and commands a ready sale at a high price, a circumstance which ought to convey a lesson to planters having an eye to the future wants of the timber trade. Oak timber of first quality is in fair demand; but the small and secondary class does not command a ready sale, consequently last year's prices for this latter description of timber are not maintained. Elm, of long lengths, clean, and of large girth, is in good request at last year's prices. Sycamore must be not less than 20 in. quarter girth to command a high figure; clean butts of Sycamore, from 20 in. to 30 in. quarter girth, are worth more than any other kind of British timber. Beech, if clean and upwards of 12 in. quarter girth, finds a ready market at former prices. Lime of good quality is eagerly sought after; it is a valuable timber tree, and a fast grower in a favourable soil and situation; it should be planted extensively. Alder and Poplar are not in great request in this locality. Larch and Scotch and Spruce Firs find a ready sale.

	Per ft.—s. d.	s. d.
Oak, first quality ...	... 3 0 to 4 0	
,, average from 20 to 30 ft.	1 6 ...	2 6
,, ,, ,, 15 to 20 ft.	1 6 ...	—
,, ,, ,, 10 to 15 ft.	1 4 ...	—
,, under 10 ft. ...	... 1 2 ...	—
Ash, first quality ...	... 2 6 ...	3 6
,, second ,, ...	... 1 6 ...	2 0
Elm, first quality ...	... 1 6 ...	—
,, second ,, ...	... 10 ...	1 3
Lime, first quality ...	... 2 6 ...	3 6
,, second ,, ...	... 1 6 ...	—

	Per ft.—s. d.	s. d.
Beech, first quality...	... 1 6 ...	—
,, second ,, ...	... 10 ...	1 0
Spanish Chestnut ...	... 1 0 ...	1 6
Sycamore, first quality	... 4 0 ...	6 0
,, second ,,	... 1 0 ...	1 6
Walnut, first quality	... 2 6 ...	4 0
,, second ,,	... 1 6 ...	2 0
Alder	... 10 ...	1 0
Poplar, first quality	... 1 0 ...	1 6
,, second ,,	... 10 ...	1 0
Larch Fir	... 1 0 ...	1 6
Scotch and Spruce Fir	... 10 ...	1 0

Pitwood, per ton of 20 cwt., 1st quality Larch, 15s. to 20s.; 2nd do., 14s. Oak bark, per ton of 21 cwt., put on purchasers' wagons at the tree foot or in the wood, £5 2s. 6d.; no allowance for stained bark. The price of bark varies throughout the country from £5 to £6 15s., the difference being chiefly caused by delivering the bark at the nearest station or at the tan-yard; also some allow 20 cwt., others 21 cwt. and 22 cwt., to the ton; this should be stated when prices are quoted. GEORGE BERRY.

Longleat, Wilts.

Planting Holly Hedges.—When is the best time to plant a Holly hedge? At what age are the young trees likely to thrive best? What distance should they be planted apart? and what attention, if any, do they require afterwards?—G. N. P., *Mayfield Villa, Kidderminster*. [Hollies succeed best when moved in April or May, and dull weather, if possible, should be chosen for the operation. August and September are also favourable months for transplanting Hollies. The ground intended for the line of hedge should be trenched from 18 in. to 24 in. deep, and from 3 ft. to 4 ft. wide, turning out bad subsoil and stones and replacing them with rich soil or fibry turf well chopped up and intermixed with the original soil in the line of fence. The plants should be from 12 in. to 18 in. high, bushy and well rooted, and planted just clear of one another. Of course smaller plants will succeed equally well and cost less money, but a longer time must elapse before the hedge will be a sufficient fence against cattle, &c. If the weather and soil be dry when planting wash the soil in amongst the fibres with a liberal soaking of water; finish off the planting by adding a thick layer of litter, Bracken, or any rough herbage over the roots; this will prove a sure safeguard should a dry summer follow after planting. All the attention that is necessary for two or three years is to keep down weed-growth about the necks of the plants. When the latter have become fairly established, and have made vigorous growth, their sides may be slightly trimmed, encouraging a broad base and narrow, wedge-like top. Holly hedges should not be topped until they have attained the desired height necessary to form a sufficient fence.—G. B.]

Abutilons in the Open Air.—At this date (Oct. 30) we have here a large number of these in full flower in open borders, indeed they are now as bright as they have ever been at any period of the

season. Plants of Abutilon Duc de Malakoff are from 6 ft. to 8 ft. high, from cuttings struck in March last, and bushy in proportion; A. Boule de Neige, from 4 ft. to 5 ft., has flowered profusely, and A. Lemoinei (a beautiful sulphur-coloured flower) is also from 4 ft. to 5 ft. high, and is one mass of flower. We cannot get such growths in the case of Abutilons in pots, and being comparatively hardy they should be used much more largely for open-air planting. Some of them are now being lifted, and by introducing them into a little warmth I hope to make them useful for indoor decoration.—W. WILDSMITH, *Heckfield.*

THE CHEROKEE ROSE.

As paragraphs relating to this Rose have lately appeared in some of the daily papers, perhaps the following account of it from the American "Agriculturist" may not be without interest:—In the southernmost States a Rose has long been known as the Cherokee Rose, and is now largely used for hedges. Under the impression that it was a native species, it was described by Michaux as Rosa lævigata, and the native origin of the plant has been advocated by various writers. After the death of Elliott, an eminent botanist of South Carolina, some of the manuscripts left by him were published in the "Southern Agriculturist" in 1831. One of these was an article upon the culture of the Cherokee or Nondescript Rose as a hedge plant, which he thus describes:—The history of this plant is obscure. It was cultivated before the Revolution by the late Mr. Nathan Hall at his plantation near the Savannah River, giving it as his opinion that it was brought down from the mountains by some Indian traders, and stating that Kin found it on or near the Cumberland Mountains, in Tennessee. In early times the foreign trade of Charleston was extensive, and there is now no doubt among those who have investigated the matter that it is an Asiatic species, which in the congenial climate in Georgia, South Carolina, and the neighbouring States, has made itself quite at home, and while it has all the appearance of a native, it is really an old species, long ago described as Rosa sinica. The Cherokee Rose, a name which it will retain, whatever botanical title may be given it, is an evergreen, with very long, almost Vine-like stems, and dark green, beautifully glossy leaves; its long shoots are furnished with strong, hooked prickles, and these harden with the wood and make the plant a very formidable one. The flowers appear in the Southern States very early in spring, and are produced in the greatest profusion. Where the plant has grown at will, and festooned itself upon the neighbouring trees, its shoots, literally covered with flowers, hang down from 20 ft. to 40 ft. The flowers are single, and of a very pure white, contrasting beautifully with the dark green of the foliage. Our object in calling attention to this plant is twofold; first, as a hedge plant. Those who have written upon hedge plants for the Southern States, prominent among whom was the late Thomas Affleck, of Texas, place the Cherokee Rose in the very front rank for beauty, strength, and permanence. In some of the Southern States there are hedges at least fifty years old in full vigour. It is very likely, judging from the fact that the Cherokee Rose has not been injured by several exceptionally cold winters in the Southernmost States, that it would succeed as far north as Maryland and Virginia. It is readily propagated by cuttings, about 6 in. long, made in autumn. Mr. Affleck's plan was to have small trenches across the hedge-row, 3 ft. apart; these trenches were 15 in. long, and in each were set three cuttings; in the spring he eradicated all weeds, and pulled up all the plants in the cross rows but one. The next winter the plants were cut back to within 1 ft. of the ground, and after that they were allowed to run at will, the shoots being laid in as they grew in the line of the hedge. When the hedge had reached a sufficient height and width, it was kept within bounds by an annual winter-pruning. A second reason for noticing the Cherokee Rose is to call attention to it as a winter-blooming greenhouse plant in the Northern States. Our people who have conservatories and greenhouses get plants from the ends of the earth, and neglect those which grow, so to speak, close at home. A few amateurs around Boston have learned the value of the Cherokee Rose, and grow it to their great satisfaction. It was first introduced there, as we are informed, by the late Col. Perkins (whose first greenhouses were built in 1806); the original plant is still vigorous and prolific, though now some twenty years old, and covers about 100 square ft. of a lean-to house, being planted out in a confined border; it has not succeeded in pot culture, as its roots require abundant room. It received a severe pruning in September, and had plenty of liquid manure during its period of growing and blooming, which is from the first of December until the middle of May. From 200 to 300 flowers are cut daily from this plant; though single, the buds and flowers are much admired, and especially suited to florists' work. This Rose is eminently worthy the attention of florists, and not the least of its recommendations is that it is generally free from the attacks of those insects which so infest other greenhouse Roses. It may be added that this Rose is very nearly related and somewhat similar in appearance to R. bracteata or the Macartney Rose, an old species introduced many years ago. Single Roses of this class are very beautiful when in bloom, and well deserve attention. They should be planted where they can ramble pretty much at will, as close pruning prevents them from flowering so profusely as they otherwise would.

Turquoise-berried Vine (Vitis heterophylla humulifolia).

THE TURQUOISE-BERRIED VINE.

(VITIS HETEROPHYLLA HUMULIFOLIA).

THIS has become near London a universal favourite as an ornamental climber or trailer, and indeed few ornamental Vines are more beautiful than it is at this late season. It has long been known in English gardens, but was comparatively unnoticed until Mr. Woodbridge, of Syon House, exhibited fruiting sprays of it before the Royal Horticultural Society at South Kensington a year or two ago, on which occasion it received a certificate as a useful trailing shrub, and was distributed, we believe, by Messrs. Veitch. Mr. G. F. Wilson, of Heatherbank, Weybridge, brought us a spray of it the other

day, from which the annexed illustration was prepared. It represents both fruit and leaves about half their natural size, but unfortunately does not convey any idea of the delicate colour of its oblate fruits. Mr. Wilson writes:—"We grow this graceful Vine in full shade at the end of a cold Lily-house, where every one admires its beautiful berries, which begin with shades of pink-purple and ripen into turquoise-blue. I believe this Vine fruits well out-of-doors, but here our feathered friends would soon dispose of the berries." It is readily propagated by layering and by means of cuttings made of the ripe wood, as in the case of the Grape Vine. B.

GARDEN RECEIPTS.

Thrips.

These may be classed with the worst insects with which we have to contend, especially in the indoor department. They do not increase so fast as the aphides, yet in some cases, as when they attack Vines, they are more difficult to destroy. The black Thrips are most destructive to Azaleas, Vines, and Ferns under glass, and to such things as Dahlias, Phloxes, and Verbenas out-of-doors. In some localities they attack late Peas in such numbers as to almost destroy the crops. The means required for their destruction vary with the different plants, and, unless means be taken to destroy them as soon as they make their appearance, they do irreparable mischief by destroying the vitality of the leaves, causing them to fall off prematurely, and correspondingly weakening the root power. Grape Vines, Melons, and Cucumbers are also frequently infested, and the insects usually find their way to plants suffering from an insufficiency of moisture at the roots, or that have been kept in a close, dry atmosphere. The best preventives are a proper supply of water to the roots, abundant ventilation, and a moderate degree of atmospheric humidity. Fumigating plants infested with Tobacco or Tobacco-paper in much the same manner as advised for the aphides is an exceedingly good remedy. For destroying Thrips upon Azaleas Mr. John Fraser, of the Lea Bridge Nurseries, states that in his establishment the following mixture has been found the best remedy:—Take 5 lbs. or 6 lbs. of soft-soap and dissolve it in about 12 gallons of rain-water, then add a gallon of strong Tobacco liquid; dip the plants, and before they become dry wash them in a tub of clean soft water, and not one Thrips will be left alive, The same process should be gone through again in about a fortnight's time, so that the young (which appear to come from eggs attached to the back of the leaves) may be killed as soon as hatched. A strong fumigation with Tobacco is a good check, but nothing answers so well as dipping the plants in the above mixture. It is not necessary to adhere strictly to the quantities of soft soap, &c., stated, as a much stronger mixture does not hurt the plants. Immersing the plants entirely so that every part is wetted is best, but if they be too large to dip, the syringe with a fine rose can be used. The above remedy is equally efficacious for other plants.

The best method for small plants is dipping them in moderately strong Tobacco-water, to which has been added 2 oz. to the gallon of Gishurst. For large plants that cannot be dipped, it is necessary to lay them down on their sides and syringe them all over, turning the plants during the operation, so as to thoroughly wet every leaf on both its upper and under surface. Not a single leaf should be missed, or the chances are that the dressing will not be effectual. Allow the mixture to dry on, and it will destroy the vitality of the eggs effectually. In the operation of washing it is necessary to use a trough, over which to lay the plants whilst being syringed, otherwise serious waste will occur. Every garden where plants are grown ought to be provided with a trough of this description; it should be made of strong galvanised iron, 6 ft. square and 10 in. deep, strengthened in the rim and across the bottom with stout iron wire. After syringing, allow the plants to lie on their sides until the liquid is quite dry upon them, as it is not desirable that it should run down in any considerable quantity amongst the roots. Plants that have been much affected with the insect should be washed in this manner twice, at an interval of a fortnight, in the autumn; and if it be thoroughly done very few will be attacked with the insects the following summer, unless some affected plant be introduced amongst them. During the growing season the plants should be frequently examined, and as soon as any of the Thrips are discovered they should be at once washed with the mixture, not allowing them time to spread.

Thrips may be readily destroyed by Tobacco smoke, but I do not approve of fumigating Azaleas, as I never saw an application of the smoke sufficiently strong to kill the insects without materially injuring the leaves, causing them to fall off prematurely; consequently it is much safer to destroy them by the application of Tobacco-water. In the stove, Ixoras, Dipladenias, Francisceas, Crotons, with numbers of other plants, are subject to their attacks. I find the best remedy is to wash the affected plants with Fowler's Insecticide (about 4 oz. to the gallon), dipping and syringing the plants in a similar way to that described for the Azaleas. Where these insects get amongst Vines they do serious mischief. After the crop is cut the living insects can be killed by repeated smokings; not so their eggs, which are deposited thickly on the young wood ready to come to life where there is sufficient heat to hatch them. The usual winter dressing of sulphur, clay, and soft soap, thoroughly applied, is sufficient to destroy them; but if they attack the Vines early in the season, or before the crop is cut, fumigation will not answer, for the Grapes will taste of the smoke to an extent that will spoil them. Sulphur mixed with clay and a little fresh lime, applied to the pipes in the same way as for red spider, will kill the mature insects, and the application must be repeated three times at intervals of eighteen or twenty days, so as to kill the young brood as they are hatched, before they have had time to breed. In all cases it is very important to watch for their first appearance and immediately adopt one of the remedies given above. The insects are small, rather long and thin, and blackish or yellow in colour, and until the colonies become large they are not readily seen. The insects keep for the most part on the under side of the leaves, and on the young shoots. The female lays her eggs usually along the margin of the mid-rib. The eggs are microscopically small, longish, round, and whitish. The larva is hatched in eight or ten days; it changes its skin four times; at the third change the rudiments of wings begin to appear; it takes about three weeks to reach its full development. Fumigation with Tobacco is the most approved remedy. It kills the perfect insect and the larvæ, but has no effect upon the eggs. The Thrips has a strong feeling for self-preservation, and no sooner does it scent anything wrong in the house than it drops from the plants and buries itself in the soil; hence the advantage of a second smoking in the same week, to catch them when they have returned to the plants. The process, consequently, requires frequent repetition—say once a fortnight, until the breed is exterminated. It is unnecessary to tell the gardener that this remedy must be used with caution, and not applied indiscriminately to all plants. Orchids suffer much from it, as do the Gesneraceæ and most Ferns. Cinerarias and Heliotropes do not like it. In such cases, sulphur in powder applied with the fingers to the moist leaves, and, still better, Gishurst Compound, have been found effectual. The small yellow Thrips is a more difficult insect to deal with than the black kind. The plants they attack are somewhat different, and not so numerous. Fumigation is frequently almost useless, from its habit of establishing itself down in the bottom of the young leaves as they unfold. Here there appears to be sufficient stagnant air to supply their breathing until the fumes escape from the house without injuring them in the least. The only way of attacking them is by the continued use of a very small bit of sponge tied on the point of a stick, so that it can be got down into the young unfolding leaves, or a small camel's-hair brush just damped with clean water, they may be kept under, but it is a slow process, and, unless where are few plants, it is scarcely possible by this means to completely eradicate them. Continued applications of clean, tepid water syringed overhead every alternate day during the growing season of the plants will soon completely exterminate these pests.

Daddy Long-legs or Crane Fly.

The Grub of the Tipula oleracea (Crane Fly, or Daddy Long-legs, as it is familiarly termed) is exceedingly destructive to all the Cabbage tribe. The larva is easily known by its long cylindrical body being destitute of feet. The best way of capturing it in Cabbage beds is by setting traps of slices of Turnips or Potatoes fixed to a wooden skewer and sunk a few inches below the surface of the ground. The larvæ will be attracted by them, and if they be pulled up every other day thousands of them may be found attached to the baits, and can be readily scraped off and burnt, while the same baits may be reset. The Grubs of the Tipula are also excessively destructive to lawns and Grass plots. One of the best remedies is that adopted by the late Mr. Cutbill, who recommended rolling the Grass at night with a 2-ton roller with a thorn scrubber well loaded. For small lawns and Grass plots numerous remedies have been recommended. One of these consisted in watering the turf with a mixture of corrosive sublimate dissolved in muriatic acid in the proportion of 1 oz. to ½ pint of acid, and the addition of 60 gallons of water. Gas-water, quick-lime, lime-water, salt and water, and other cheap preparations that usually prove fatal to insects, are of no special value in this case, because to employ them sufficiently strong to penetrate the leathery jackets of these Grubs makes the case worse by killing whatever Grass still remains for the renewal of the turf. The best mode we have as yet heard of for dealing with this plague is contained in a report to the Parks and Open Spaces Committee of the Metropolitan Board by Mr. N. Sinclair. He says, "The experience by which I obtained this method was gained through a similar invasion of the Embankment Gardens by these insects four years ago, when I had the opportunity of studying their habits and ascertaining the best means for their destruction. I found that only certain portions of the gardens were infested, from which I infer that their haunts depend much on the wind and weather, being thus driven to collect in the most sheltered places where they deposit their eggs. The Grubs make their appearance in January, and when commencing their depredations may be captured in thousands by cutting square trenches 6 in. wide and 6 in. deep, into which the Grubs in their wanderings fall, and since they cannot crawl up the perpendicular sides of the trench, they may be swept up the next morning and thrown into salt, that being the only substance I have found efficacious in killing them. I have tried other things for that purpose, such as quick-lime, soot, snuff, &c., but none answered the purpose so well. The remainder of the Grubs that are not swept up turn to the chrysalis state, and in due time come forth as the well-known Daddy Long-legs, and soon after spread themselves abroad and deposit their eggs wherever it is most likely their offspring will find suitable sustenance. As soon as they make their appearance on the wing there is nothing better than heavy garden rollers. On a smaller scale garden rollers are also very efficacious. A correspondent of the "Field" gives the following remedy as being perfectly successful:—About six o'clock in the evening thoroughly roll the Grass and turf edgings infested with them, not once but each way, so that none escape with a slight squeeze. The Grub which lies in the ground from the Tipula does an immense amount of mischief to the lawn. Roll the lawn with the wind, as the insect seems to be blown about at the mercy of the elements. In mild cases gas-water has been used successfully. Fowls are also very fond of the perfect insect, and a number turned out on the infested turf will do good service.

Tree Caterpillars.

The Goat Moth Caterpillar, which does much damage to large trees, especially Birches, may be destroyed by boring after them, and filling up their holes with paraffin and lime. The trunk should be well dusted with lime, and the trees well watched throughout the summer for any stragglers that may have escaped.

—— Coal-tar has been recommended as a remedy for that terrible insect, the Wood-gnawing Caterpillar (Cossus). It gets under the bark and into the wood of Elms, Willows, and Poplars, and destroys them rapidly. In some valleys where Poplar trees are cultivated to a great extent, it is a positive scourge. There is, however, a simple way of preventing the mischief; it consists in daubing the bases of the young trees every two years with coal-tar. A ring of this liquid painted on each tree will have the desired effect, as the Caterpillars dread it like the plague.

Tree Stumps.

To remove stumps from a field, all that is necessary is to have one or more sheet-iron chimneys, some 4 ft. or 5 ft. high; set fire to the stump and place the chimney over it, so as to give the requisite draught at the bottom. It will draw like a stove, and the stump will soon be consumed. With several such chimneys, of different sizes, the removal of stumps may be accomplished at merely nominal labour and expense. In the autumn bore a hole 1 in. to 2 in. in diameter, according to the girth of the stump, vertically in the centre of the latter, and about 18 in. deep. Put into it from 1 oz. to 2 oz. of saltpetre; fill the hole with water, and plug up close. In the ensuing spring take out the plug, and pour in about 1 gill to 2 gills of kerosine oil and ignite it; the stump will smoulder away, without blazing to the very extremity of the roots, leaving nothing but ashes. The stump must be in a fresh sappy state when the saltpetre is put in, or it will not permeate the fibres thoroughly, which is essential to the success of the experiment. Sprinkle on the tops of the stumps a pint or two of paraffin oil or petroleum, and as the stumps are seamed, weather-cracked, or decayed, it soon disappears. On the top of the stumps pile refuse wood, and after two or three days set fire to them, and they will be completely consumed. A lad can do the work, and have scores on fire at once.

Turnip Caterpillar.

This is the most destructive of all British insects, the Turnip fly not excepted. The egg is laid in June, either on the ground or on some plant, generally a seedling, close to the ground. Hatched in this situation the infant Caterpillar is enabled to attack the young Turnips, Carrots, Cabbage plants, Charlock, Mangold Wurzel, Radish, and also a number of the common weeds. When young its depredations are mostly about the surface of the ground, and it seems to delight in that particular part of a plant which lies between the root and stem; great numbers of young Turnips and Carrots are divided at this spot, the upper part being left to perish on the surface of the ground. It also visits our flower gardens. Very often in a bed of China Asters the leaves of a plant here and there will be found withering and curling up. The only remedy is looking for the mischief maker with candle and lantern, and picking up every Caterpillar, and it is destructive to dig between the plants. Some gardeners, after becoming really acquainted with the enemy, sprinkle lime on the ground, others sawdust, others soot, others salt, others ammoniacal water from the gas-works; but the result of each method is uncertain and unsatisfactory.

Turnip Fly.

The Turnip Fly (Haltica nemorum) is one of the most formidable pests with which the British cultivator is acquainted. Although called a fly it is in reality a beetle, and is equally destructive, both as a grub and as a perfect insect. The remedies proposed for its destruction are simply innumerable, the plan which seems to be perfectly successful in one locality being useless ten miles off. As in many other instances, it seems better to use preventive measures against this insect than to wage hopeless war against it after it has once gained a footing. With regard to preventive measures the late Edward Newman writes:—"In the counties I have most frequently visited there are generally huge embankments thrown up after the manner of the earth-works of the ancient Britons. On one side there is often a deep trench, on the other side a broad strip of uncultivated land which is occupied by weeds. On the top of the embankment is an assemblage of Hazel, Oak, Maple, and Whitethorn, thickly interspersed with the dwarfed suckers of mutilated Elms. The whole of these fortifications are adorned with a rank and luxuriant crop of Charlock, Hedge Garlic, Docks, Thistles, Knobweed and Kecks. In such spots I have exercised my sweeping net, and found the Turnip Beetles in swarms. I would recommend reducing these embankments both in

number and magnitude, and throw the whole space into the field; when there was an absolute necessity for a fence, I would reduce it to the smallest possible dimensions, and would clear it of Charlock, Hedge Mustard, Docks, Thistles, and Kecks; instead of allowing these weeds to increase and multiply by the dispersion of their seed, I would gather them into heaps, and, watching my opportunity, actually fire them in the face of the enemy day after day in the brightest sunshine, now and then casting a pinch of sulphur into the smouldering, smoking mass. The gain of land would repay tenfold the required labour to harvest the weeds; the weeds themselves would be only fuel required; and 5s. worth of sulphur would be enough for a good-sized farm."—With regard to smoking the fields, Mr. Newman observes:—"Experience having taught me that insects abominate smoke, and are killed by the fumes of sulphur, I endeavoured to bring this experience to bear on the Turnip Beetle, and found it most successful. Observing that the Beetles, when there was any breeze at all, came against the wind, I lighted a series of weed fires on the lee side of a Turnip field, and thus arrested the advance of the invading army. I believe most experimentalists would have lighted the fires to the windward of the Turnips, so that the smoke would be blown all over the field; but knowing the direction the enemy was taking, or would of necessity take, I thought it better to meet him outside the trenches, and thus render the field of battle, if I may so call it, offensive instead of inviting. This strategy was followed until the Turnips were strong enough to resist the invader without any assistance of mine, and the crop was saved."

There are also two other favourite preventives which have proved effectual in some cases, but not in others. One is, to sow the seed in drills instead of broadcast; the other, to mix the seed with flowers of sulphur before sowing. Brushing the insects off the plants; sprinkling them with quick-lime or lime-water; burning the surface of the land are said to be effective; trenching the ground deep is also resorted to; and strewing the ground thickly with gas-lime for three mornings after the seed is sown is also said to be effectual.—In small gardens a light frame stuck full of Alder branches, and drawn over the crop, will discompose the enemy; or a strip of cloth 6 in. wide, and well covered with bird-lime, may be used with great effect.—The following receipt may also be tried:—To 1 gallon of chamber-lye add 2 oz. of tincture of assafœtida. Soak the seed in this mixture twenty-four hours, and dry it in the shade. It is very necessary to attend strictly to the drying—the object being for the seed to absórb the liquor, which takes a considerable time if done properly in the shade; the sun's rays or drying winds proving fatal to this receipt. Care must also be taken to have the chamber-lye free from slops. The gallon mentioned in this receipt will prepare 16 lb. of seed.—A correspondent who states that he has been free from this plague for two years writes as follows:—In the district in which I farm Turnip culture is conducted invariably upon the ridge system; and the only means I use to secure a crop, in spite of the fly, is to supply it abundantly with its favourite food—the white Turnip. This I do by having a third canister fitted on the centre of my Turnip drill, and the seed intended for the fly—very fresh white seed—is deposited upon the ground between the crop-bearing ridges. It is covered up by the fine earth, which is displaced by the coulters, and, being slightly covered, vegetates earlier than the crop. Even when the crop consists of white Turnips it has been only slightly damaged, the extra quantity of food supplied to the insect having rendered its ravages comparatively harmless.

Varnishes.

Before any article is varnished it should be thoroughly cleansed from all grease spots with plenty of hot water, soap, and soda, which must be well washed off. It is also essential that the article to be operated upon should be perfectly dry.

The following is a good Varnish for rustic seats:—Boil 1 quart of boiled Linseed oil and 2 oz. of asphaltum over a slow fire till the asphaltum is dissolved, the mixture being kept stirred to prevent it boiling over. This gives a fine, dark Oak colour, is not sticky, and looks well for a year.—Or, first wash the furniture with soap and water, and when dry, on a sunny day, brush it over with common boiled Linseed oil; leave that to dry for a day or two, then varnish it over once or twice with hard Varnish. If well done this will last for years, and prevent annoyance from insects.—A common Black Varnish for wood and iron may be made by mixing 1 gallon of coal-tar with ½ pint of spirits of turpentine and 2 oz. of oil of vitriol, stirring the mixture briskly until the ingredients are thoroughly incorporated.—A fine kind may be made by adding 4 oz. of asphaltum and 8 oz. of burnt umber to 1 gallon of boiled Linseed oil. Grind the umber smooth with a little of the oil, and add it to the asphaltum previously dissolved in a pint of the oil by heat, then add the remainder of the oil; boil, cool, and thin with turpentine to the proper consistency, or melt 2 lb. of asphaltum in an iron pot; add of hot boiled oil 1 pint, mix well, cool, and add 2 quarts of oil of turpentine.—A good Varnish for white wood is made by dissolving 3 lb. of bleached shellac in 1 gallon of methylated spirit; strain and add 1½ gallon more spirit. Fine, dry, warm weather should always be chosen for varnishing operations.

Vine Pests.

These invariably come from neglect. If the atmosphere of Vineries be kept in a clean and healthy state, and the ventilation attended to in a timely and proper manner, neither insects nor mildew will be troublesome; but neglect these precautions and one, if not both, will quickly be seen upon the Vines. Red spider and thrips luxuriate in a dry close atmosphere, mildew in a close damp one; but it is a rare thing for either to appear if the atmosphere of the house be kept pure and healthy. A healthy atmosphere can only be secured by the timely admission of air in the morning; indeed, the atmosphere of a forcing or plant-house to be really healthy should have a constant ingress and egress of fresh air night and day, not necessarily a strong draught, but just sufficient to admit of a gentle circulation of fresh air. All good cultivators are cognizant of the importance of an arrangement of this kind, and for very early forcing special arrangements are made to that end. The best and most durable arrangement for this purpose is to place opposite two or three of the ventilators (the number being governed by the size of the house) frames of the necessary width, and about 1 ft. deep, filled in with fine perforated zinc. Through this the heated air escapes very gently, but still sufficiently to allow of the necessary change of air. An atmosphere so regulated, with a sufficient degree of moisture, is the very opposite of what is required for the propagation of mildew or insect life. The remedies for the different insects that attack the Vine will be found under their respective headings.

Washes for Fruit Trees.

Insects and mildews injurious to the leaves of fruit tree seedlings and root grafts can be kept in subjection or destroyed by a free use of the following combination of lime and sulphur: Take of quick or unslaked lime four parts, and of common flour of sulphur one part—break up the lime into small pieces, then mix the sulphur with it in an iron vessel, pour on them enough boiling water to slake the lime to a powder; cover in the vessel close as soon as the water is poured on. This makes also a most excellent whitewash for orchard trees, and is very useful as a preventive of blight on Pear trees, to cover the wounds in the form of a paste when cutting away diseased parts, also for coating the trees in April. It may be considered as the one specific for many noxious insects and mildew in the orchard and nursery; its materials should always be ready at hand; it should be used quite fresh, as it soon loses its potency. Wherever dusting with lime is spoken of this should be used. This preparation should be sprinkled over the young plant as soon as or before any trouble from aphides, thrips, or mildew occurs, early in the morning while the dew is on the trees. This lime and sulphur combination is destructive to these pests in this way, by giving off gaseous sulphurous compounds, which are deadly poison to minute life, both animal and fungoid; and the lime destroys by contact the same things, besides its presence is noxious to them; neither is it injurious to common vegetable life, except in excess. The above is recommended by a Commission of fruit growers, presided over by Professor

Cyrus Thomas, State Entomologist of Illinois, and is part of a very full report embodying advice as to the best means and ways of fighting the insects that infest the orchards of that State.

—— The following receipt for a wash for orchard trees is used by Mr. William Saunders, of the Government Gardens at Washington:—Put ½ bushel of lime and 4 lb. of powdered sulphur in a tight barrel, slaking the lime with hot water, the mouth of the barrel being covered with a cloth; this is reduced to the consistency of ordinary whitewash, and at the time of application ½ oz. of carbolic acid is added to each gallon of the liquid. It is usually applied in the spring, but in the opinion of Mr. Saunders it would be more effective if applied later, but the great difficulty of such operation is the foliage on the tree. Apply to trunk; it will not hurt the branches or foliage if applied to them also.

—— An experienced fruit-grower, the owner of a fine orchard near Niagara River, Western New York, uses the following simple method with eminent success. He takes lye from wood ashes, mixes a little grease with it, heats quite warm, and, with a syringe, throws it up into all parts of the trees, branches, and trunk. It will effectually kill all kinds of caterpillars and all kinds of worms that are either infesting the tree in nests or running over the bark. Trees treated in this manner were exceedingly healthy, beautiful, and vigorous in appearance, possessing a smooth, glossy bark, and bore the best Apples in the country. The remedy is easy and cheap. Common potash will do as well when wood ashes are not obtainable.

—— For Vines and Peach trees, wash them well with soap and water, and when they are dry paint them with 2 parts of flowers of sulphur, 2 parts of soil, 1 part of soft soap, and 2 parts of clay, reduced with water to the consistency of paint.

—— Old fruit walls that have become so full of nail-holes from long use that they harbour insects, should be washed with a mixture of Portland cement, lime, and blue-stone, a good handful to 1 gallon, which will not only fill up the nail-holes to some extent, but will also help to eradicate the insects. The mixture can be made of a lighter or darker tint, according to taste, by adding to it a little more or less yellow ochre. The blue-stone should be dissolved in 1 quart of the water and added to the mixture.

Wasps.

The depredations of Wasps are principally confined to their attacks upon ripe fruit. For some miles round the outskirts of large towns they never appear in such numbers as in purely country districts, where they are not so much molested. It is here that the ravages they commit are the most serious, with some fruits almost defying any means to preserve even a portion of the crop. The Green Gage Plum is an especial favourite with them. Pears, Peaches, and Nectarines on the open walls suffer in like manner. Ripe Grapes are especially their favourites. Like the majority of other pests that attack garden produce, they are best nipped in the bud. On fine mild days in early spring the warmth of the sun brings the queens out, every Wasp at this season representing a colony, and every means possible should be employed to destroy all that make their appearance thus early. A small price upon their heads at this season offered to children will prevent the progeny of these queens from ever coming into existence. All nests that can be discovered should be destroyed. An offer of 6d. or 1s. each for the nests will be sufficient inducement to bring very great numbers of them in. Several methods are employed to destroy Wasps, of which the following are the most approved:—

Cyanide of Potassium.—Procure about ½ lb. of Cyanide of Potassium; dissolve this in boiling water sufficient to cover it, then have in readiness some cotton wool, and proceed to the nests; saturate a small portion of wool in the poison, and with a stick deposit it at the mouth of the hole, slightly pushing it inside—the entrance must be nearly stopped with the wool; in half-an-hour dig out the nests and destroy them thoroughly. Another way is to dissolve 2 oz. of Cyanide of Potassium in 1 pint of water, and pour the liquid into their nests at night. The solution is, of course, very poisonous, and should only be entrusted to a responsible person. As soon as the Cyanide is dissolved it should be put into a bottle, and be securely corked and labelled "Dangerous Poison."

Gas-tar.—A very good method of destroying their nests is, after dark, when the greater portion of the colony are at home, to thrust rags, dipped in gas-tar, into the nests, which should be freely ignited close up to the hole—not a Wasp will escape death. The nests may then be dug out, and the young grubs destroyed.

Netting.—Muslin or thin paper bags, in which to enclose Grapes, are often used; but there are several objections to both, especially in the autumn, for, if the bunches be not frequently examined, a few berries begin to mould, which quickly affect the whole bunch. The moving of the covering also destroys the bloom, so indispensable to the appearance of first-class fruit; and it frequently happens that, with all the care that can be given, the Wasps will find their way through the bags. By far the most effectual method to adopt is to keep them out of the house altogether. This can be done by the use of the hexagon garden netting, tacked over all the openings where air is admitted: this is sufficiently open to admit all the air required, without the Wasps being able to get through; even if the doors be required open, a large piece of the netting can be temporarily hung over the doorways in such a way as to exclude the Wasps.

Traps.—Traps may be made as follows:—Take a bell or hand-glass with a small hole in its top, elevate it on half-bricks, place some damaged fruit under it to allure the Wasps, then place on the top another glass, tight-fitting in every way; numbers of the insects will ascend through the hole in the top of the under glass into the upper one, from which they cannot find any exit and soon perish. A number of these traps placed upon the wall coping, as also on the ground at the foot of the trees, will be found effectual, not only for the Wasps, but also for the large blue-bottle flies, which generally first attack Peaches, making incisions which are quickly taken advantage of by the Wasps. Mr. Gilbert, of Burghley, states that he saved a crop of Peaches by "taking" five hives of bees and putting the empty hives by the side of the Peach walls. In a few minutes they were, literally speaking, full, when he treated each hive to a little boiling water, killing the Wasps by thousands.

Treacle.—When they attack choice fruits, such as Peaches, Nectarines, and Apricots on the open walls, it is necessary not only to adopt means for their destruction, but such also as will attract them from the fruit they are devouring. Every tree bearing fruit on which they are busy at their work of destruction should have three or four wide-mouthed bottles hung in it half-filled with sweetened beer or treacle and water; this will attract them from the fruit, and they will also perish in large quantities.

Turpentine.—Another method is to take an ordinary beer or wine bottle, containing a small quantity of Spirits of Turpentine, and at nightfall, when the Wasps are quiet in the nest, thrust the neck of the bottle into the entrance and let it remain for a day or two. The fumes of the Turpentine will suffocate all the Wasps, and the nest may then be dug out and the grubs destroyed.

Waterproofing.

Boots.—Gardeners are, from the nature of their occupation, liable to suffer from damp feet, and hence the utility of "sabots," both in the hothouses and when standing about on the damp soil, as in nailing. Some authorities say that it is a bad plan to grease shoes for the purpose keeping them soft, it rots the leather, and admits dampness more readily. It is better to make a varnish thus:—Put ½ lb. of shellac, broken into small pieces, in a quart bottle, cover it with methylated spirit, cork it tight, put it on a shelf in a warm place, and shake it well several times a day; then add a piece of camphor as large as a hen's egg; shake it again, and add 1 oz. of lamp-black. If the methylated spirit be good, it will be all dissolved in three days, then shake and use, pouring out two or three teaspoonfuls in a saucer, and applying it with a small paint-brush; adding more spirit if it get too thick. If the mate-

rials be all good it will dry in about five minutes, and will be removed only by wearing it off, giving a gloss almost equal to patent leather. The advantage of this preparation over others is, that it does not strike into the leather and make it hard, but remains on the surface, and excludes the water perfectly. The same preparation is admirable for harness, and does not soil when touched, like lampblack preparations.

—— Another method is to put into an earthen pipkin ½ lb. of bees'-wax, ½ pint of neatsfoot oil, 3 or 4 tablespoonfuls of lamp-black, and a piece of camphor as large as a hen's egg. Melt the ingredients over a slow fire, stir them thoroughly after they are melted, never heating it so hot as to make it boil. Make the leather warm, and warm the grease and put it on with a brush. It is not desirable to dry this in before the fire, but allow it to remain on the surface of the leather. A light coat of this kind will exclude the water even if the boots be exposed to the wet all day, and it will not injure leather by rendering it hard. When boots are exposed to wet wash them clean at night and hang them up where the leather will dry gradually, and put on a little of the above mixture every morning. It is far better to use a little often than to use it bountifully every ten or twelve days; the leather should not be allowed to become very dry before the mixture is applied.

—— A pint of boiled Linseed oil, ½ lb. of mutton suet, 6 oz. of clean bees'-wax, and 4 oz. of resin, are to be melted and well mixed over a fire. Of this while warm, but not hot enough to shrink the leather, with a brush lay on plentifully over new boots and shoes when quite dry and clean; the leather remains pliant. The New England fishermen preserve their boots water-tight by this method, which it is said has been in use among them above 100 years. They can thus stand in water hour after hour without inconvenience.

—— Before wearing your boots give the bottoms a good coating of tallow and tar and dry it in; then oil the uppers with castor oil—about one table-spoonful will be sufficient. The effect of castor oil is to soften the leather, while it fills the pores and prevents the water from entering.—India-rubber in fragments, 1 oz.; boiled oil, 1 pint. Dissolve the rubber in the oil by heating them together very gently, and then add another pint of hot boiled oil, stirring the mixture well.

—— Boiled oil, 1 pint; bees'-wax and yellow resin, of each 2 oz.; melt them together.

The above, which should be applied warm before the fire, may be used for any kind of leatherwork as well as for boots and shoes.

Calico.—Waterproof calico for pits and frames may be made as follows:—Old pale Linseed oil, 3 pints; sugar of lead (acetate of lead), 1 oz.; white resin, 4 oz. Grind the acetate with a little of the oil, then add the rest and the resin. Incorporate thoroughly in a large iron pot over a gentle fire, and with a large brush apply hot to a fine calico stretched loosely previously, by means of tacks, upon the frame. On the following day it is fit for use, and may either be done over a second time, or tacked on tightly to remain.

Garments.—Waterproof clothes are so cheap that it is scarcely necessary to give a receipt for preparing them. The following, however, will be found a good method:—To waterproof any sort of cloth or made garments, all that is necessary is to make a very weak solution of glue or size (when cold it is weak and tremulous, about the consistency of calves' foot jelly), and while hot stir in a piece of alum until the taste of it can be distinctly perceived, when the piece is to be taken out, at the same time adding a little soap also, or rather soap-suds, to it, and then, while it is hot, brush over the surface of the clothes with this solution.

Paper.—Dissolve 1¾ lb. of white soap in 1 quart of water; in another quart of water dissolve 1½ oz. of Gum Arabic and 5 oz. of glue. Mix the two solutions, warm them, and soak the paper in the liquid, and pass it between rollers, or simply hang up to dry.

Polemonium cœruleum variegatum.—This fine-foliaged plant is not so much used for flower garden decoration as it should be. For a row near the front of a ribbon-border, or surrounding a small bed, it is the prettiest plant I have seen. It grows from 6 in. to 12 in. high, and the leaves are thrown out from the centre stem; they are light green and white in equal parts, and in form they are as delicate and handsome as any Fern frond. I call attention to it now because its beauty in summer greatly depends on how it is treated during the cold season. It will live throughout the winter if left in the ground, but when the fresh leaves appear in spring, they are generally deficient in colour as they come green, and want the fine variegation which is their principal attraction. To avoid this, and retain all their delicate lines, it is necessary to lift the plants at the present time and place them in pots, when they should be wintered in a cold frame. The soil in which they are potted should be very light, and they must be kept just moist, but neither wet nor dry, until spring. Old plants generally emit a number of small crowns, from which the plants are increased. They should be taken off in March, and potted singly in small pots, when, if kept close and moist in a frame, they root quickly, and form healthy plants for turning into the open ground early in May.—H.

Hardy Plants in Flower at Heatherbank, Weybridge.—On looking over the rock and rootwork and herbaceous borders, I noticed the following plants in flower, viz.:—Meconopsis cambrica, Ophiopogon Jaburan, Anemone japonica, A. Honorine Joubert, Geranium Endressi, Tradescantia, Fragaria indica (a pretty trailer, with yellow flowers and bright coloured fruit, and for which, with many other good subjects, I am indebted to Mr. Ellacombe, of Bitton), Astrantia Biebersteini, A. intermedia, Salvia angustifolia (very pretty), Tritonia aurea, Schizostylis coccinea, Erodium Manescavi, Armeria cephalotes, Tropæolum tuberosum, Iberis semperflorens, Tuberous-rooted Begonias, Antirrhinums, Phlox Drummondi splendens (from Mr. Thompson, of Ipswich—very beautiful), Lobelia syphilitica (both purple and white), Cyclamen hederæfolium, Plumbago Larpentæ, Primula auriculæflora (from Mr. Dean), and other Primroses, Asters, Sedum Sieboldi, S. variegatum, Tiger Lilies, Œnothera sinuata maxima, Œnothera (trailing), Tritoma Uvaria grandiflora, Saxifraga Fortunei (quite hardy), Androsace lanuginosa (very pretty, from Mr. Atkins, of Painswick), Lithospermum prostratum. In a pit—Crocus Clusii, very pretty, from Mr. Maw); on a raft—Lobelia cardinalis (which I did not know to be a water plant till lately informed that it had been found growing in deep water); in the greenhouse—Lilium Catesbæi, very beautiful.—George F. Wilson.

Rose-wood.—According to one of the American journals, it has puzzled many to decide why the dark wood so highly valued for furniture should be called Rosewood. Its colour certainly does not look like that of a Rose, but when the tree is first cut the fresh wood possesses a strong Rose-like fragrance; hence the name. There are half-a-dozen or more kinds of Rosewood trees found in South America and in the East Indies and neighbouring islands. Sometimes the trees grow so large that planks 4 ft. broad and 10 ft. in length can be cut from them. These broad planks are principally used to make tops for pianofortes. When growing the Rosewood tree is remarkable for its beauty; but such is its value in manufactures as an ornamental wood, that some of the forests where it once grew abundantly now have scarcely a single specimen. In Madras the Government has prudently had great plantations of this tree set out in order to keep up the supply.

NOTES AND QUESTIONS—VARIOUS.

The May Flower in the Edinburgh Botanic Garden.—This charming creeping shrub (botanically Epigæa repens), which has proved so difficult of culture in southern gardens and nurseries, is well established and growing rapidly in the extensive rock-garden at Edinburgh. The English name above given is that frequently applied to the plant in America, where its blossoms are gathered in the woods in May.—V.

Moræa (Iris) fimbriata.—I had an old plant last year of this Moræa, and I can truly say that it is both beautiful and free-flowering. I was so pleased with it last year that I have increased it to twenty-four plants, and hope to cut a quantity of bloom from them. I keep them in a warm house, but if spared next year, I wi l certainly try planting them out during the summer months.—W. L., *Aske, Richmond, Yorkshire.*

Lapageria rosea and its White Variety.—The blossoms of these are valuable for vases and for greenhouse decoration at this season of the year, when good flowers are comparatively scarce. Both associated are still in great beauty at Messrs. Veitch's, where they are planted on each side of a long corridor, and the plants trained in festoons under the glass roof. A more lovely sight than they now are could scarcely be imagined—hundreds of flowers of the purest white and brightest rose being intermingled, a condition in which I found these plants more than three months ago.—S.

Forthcoming Root Shows.—At three of these, which take place this month, prizes of considerable value are to be awarded. At that of Messrs. Carter and Co., to be held at the Agricultural Hall on the 21st inst., some £250 are to be thus distributed; at that of Messrs. Sutton, on the 25th, nearly £240; and at that of Messrs. Webb, of Wordsley, on the 17th, £200—in the form of money and cups.

Dahlias in Pots in Covent Garden.—Dwarf Dahlias grown in pots, or rather lifted from the open ground and potted, command a ready sale in Covent Garden, and if kept well supplied with water and set in a shady window, they will doubtless keep in bloom for a long time.—S.

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

WINTERING FLOWER GARDEN PLANTS.

AT no season of the year do summer bedding plants need more care and attention than during the dull days of November, especially such as have been propagated late in the autumn. It is a too common practice—though often an unavoidable one—to defer the propagation of plants of this kind until late in September, and sometimes October, when the nights have become cold and growth to a great extent arrested. Cuttings then root slowly and imperfectly, and are in consequence wintered with difficulty, especially where house room is limited. Cuttings often cannot be taken from flower-beds in August without impairing their beauty, but there are few places in which spare borders and other vacant spaces might not be advantageously planted for the express purpose of providing young stock, and if these were utilised in that way the difficulty of obtaining cuttings early would be at once overcome. Failures that sometimes occur in wintering bedding plants do not, however, always arise from late propagation; on the contrary, cuttings struck early sometimes winter badly. Much depends upon the condition in which the cuttings are when struck. On the approach of frost they are often taken off and hurriedly packed together in large, deep, badly-drained boxes or pots, without any regard being paid to the quality of the soil in which they are put, the chief points apparently being to get them inserted as quickly as possible, to saturate them with water, and afterwards to huddle them together into some spare corner of a Vinery or Peach-house some 20 ft. away from the glass, a position in which they remain until they are required to be potted in the spring. Under such circumstances need it be wondered at that many are found wanting? In striking bedding plants with a view to wintering them safely the aim should be to see that they have good drainage, good soil, and that they are properly inserted, whether grown in pans, boxes, or pots. The latter are best; they should be half-filled with drainage, which should be covered over with Moss or rough leaf-mould, and the remainder should be filled up with good sandy loam. After the cuttings are inserted, the pots may be placed either out-of-doors or in a cool, airy frame close to the glass, where they can be protected from heavy rains, but where they can still enjoy a free circulation of air. As soon as cold weather sets in, the young plants should be removed into the lightest, driest, and most airy place available, where they can be subjected to just enough heat to keep them dry and exclude frost. Very little water will be necessary during winter, but whenever it is applied it should be done on the mornings of fine days, so that air can be afterwards freely admitted to dry the atmosphere and prevent the foliage from damping. Water, when supplied, should also be given in sufficient quantity to thoroughly soak the soil, and thus render frequent applications of it unnecessary. Back shelves in Vineries and Peach houses, near the glass, are excellent places on which to winter bedding plants, such positions being light, airy, and dry. The great difficulty experienced in keeping Verbenas free from mildew and other diseases that attack them in winter arises from an insufficiency of air and light. The best Verbenas, perhaps ever seen, were raised from cuttings inserted in pots during the month of August under hand-lights, and subjected to the full influence of sun and air on every possible opportunity. With the exception of a mat thrown over them during severe frost, they were otherwise unprotected; in spring they were cut back and placed in heat, and afterwards they became strong and healthy plants, which furnished a good supply of cuttings. Petunias, Lobelias, Tropæolums, and, in fact, all bedding plants, are best treated in as hardy a manner as is consistent with safety. If cuttings be kept dry and airy there is not much danger of their being injured by cold, unless they happen to be subjected to actual frost. Damp, as indeed most people know to their cost, is the great enemy of all kinds of bedding plants during winter, and this can only be obviated by means of free ventilation, so as to maintain a dry atmosphere. Echeverias, Sedums, and other succulent plants, although they will stand several degrees of frost with impunity, cannot endure damp, which in winter proves fatal to many of them. As regards the wintering of Alternantheras, Mesembryanthemums, Coleuses, and similar plants, although they will not submit to quite such hardy treatment as Pelargoniums and Verbenas, yet far better results might often be realised than are sometimes obtained if they were treated in a hardier manner than they generally are. They are not unfrequently wintered in Pine stoves, Cucumber houses, and other hot places in which neither air nor sun can reach them effectually, and in spring the result is sickly plants, instead of vigorous ones that will produce strong and healthy cuttings. Few plants can be propagated more readily than Alternantheras, yet how often do we hear of people being troubled to get enough of them by bedding-out time! The secret of success lies in having the plants, whether struck from cuttings or lifted from the open ground, well established before cold weather has set in, so as to enable them to withstand a low temperature. Plants kept in a dry, airy temperature of 45° or 50° through November and December, and introduced to the propagating pit in January or February, will produce abundance of young, healthy cuttings that will strike readily in a few days. In small gardens in which little glass is at command, other modes of wintering bedding-plants have to be resorted to, such as placing them in turf-pits, cellars, sheds, and even in hay-lofts, and under such conditions they sometimes winter fairly well. In such cases, however, it is essential that the plants be well established previous to their being stored away, inasmuch as plants with green, sappy wood, and newly-made tender roots, will generally suffer from want of light and air, to which they can rarely have access in such places as those just mentioned. Established, strong-rooted plants with firm wood will, however, withstand a large amount of rough treatment, especially Pelargoniums, Fuchsias, and succulent plants; the chief point on which success depends, being the keeping of the foliage and roots in as dry a state as possible without allowing them to suffer seriously thereby. In turf-pits, lofts, or sheds, sufficient air can be admitted to keep the plants in a healthy condition by opening the doors or windows, but when stored in cellars the case is different, little air and light being admissible; indeed, such places are unfit for storing plants, and where no better means of wintering them exist, it is advisable to dispense with plants that need indoor protection, and substitute such as are of a more hardy character. Where turf-pits are employed, the walls should be built sufficiently thick to exclude frost, and if the inside can be lined with dry straw or bracken, a great advantage will be gained. Such pits should occupy a light sunny position, in order that they may receive every ray of sunshine that occurs during the winter, and if they be built with hollow bottoms, the roots of the plants may be kept in a dry and healthy condition. If, for example, we build a turf-pit 30 ft. long and 6 ft. wide, the walls all round may be 2 ft. thick; this will leave a trench along the centre 2 ft. wide, and into this may be put a few rough faggots; or wooden hurdles, supported by the walls, may be placed 1 ft. from the ground, so as to leave the bottom hollow. Over these should be a layer of thin turf with the Grassy side downwards, and then a few inches of sandy loam, into which the cuttings may be inserted as early in the autumn as possible, in order to allow them to get established and their wood ripened before severe weather has set in. If they be struck in pots—which is, as has been already stated, the best way—ashes may be put over the layer of turf in place of loam, and the pots may be plunged into them up to their brims. The great advantage of growing young bedding plants in pots is that they can be readily cleared of decayed leaves or weeds. The walls of turf pits should be 12 in. or 15 in. higher than the level of the bed on which the plants are placed, and instead of the turves being laid with their Grassy sides downwards, as recommended for the beds, a course the very reverse of this should be followed, inasmuch as the Grass will grow and fill up any little crevices that may exist in the walls. Straw hurdles, mats, and similar protecting materials are generally used for top coverings, but if thin wooden shutters could be applied

for that purpose in a slanting position so as to throw off rain, a great advantage would be gained, and these shutters, moreover, would exclude any ordinary frost; but when the latter is severe, an extra covering of straw or litter could be readily applied. Where spare sashes can be made available they are of course the best, but in any case the plants should be exposed to as much light and air as possible. Water should be withheld from the roots until the plants show evident signs of suffering from drought. Cuttings of Calceolarias should not be put in until October, as if inserted too soon they often overgrow themselves before winter arrives, and are frequently injured in consequence. It will always be found a good plan to put in a batch of cuttings under a wall or fence, in addition to those placed in pits, as in mild winters such cuttings sometimes make the best plants. S.

NOTES OF THE WEEK.

Geranium armenum in Autumn.—This, the finest of all the larger-flowered group of Geraniums, is now blooming freely in the open border, in Messrs. Backhouse's Nurseries at York. It is a plant which should be in every collection of hardy flowers owing to the rich colour of its large and numerous blossoms. G. Endressi is also now flowering freely.

New White Grapes.—Well-grown clusters of the late Mr. Pearson's seedling Grapes, Golden Queen and Mrs. Pearson, were exhibited last Wednesday at South Kensington, where they were much appreciated for their handsome appearance and good flavour. As a golden-skinned variety for market purposes, Golden Queen is likely to be valuable. Mrs. Pearson, although less showy, is delicious in flavour, and should henceforth find a place in every Vinery.—V. H.

Sternbergia lutea.—This bright autumnal-flowering plant deserves to be more extensively grown than it is; where it flowers freely it is as effective in autumn as the common yellow Crocus is in spring; but the conditions that suit its flowering freely do not seem to be common, for we seldom notice it in good bloom, the best show from established plants we have seen having been in the Cambridge Botanic Garden, in which some years ago it was a very brilliant ornament.—V.

The Mauve Periwinkle (Vinca acutiloba).—This distinct and elegant Periwinkle is now in flower in the herbaceous border in Messrs. Backhouse's Nurseries at York. It is valuable from flowering late in the autumn and in winter, and also from the delicate mauve colour of the blossoms. It is not a variety of either of the old and long-cultivated Vincas, but a newly-introduced species from the South of Europe. It is particularly suitable for the embellishment of sunny banks and slopes, and for warm borders.

A New Orchard-house Fruit.—At the last meeting of the Royal Horticultural Society Mr. G. F. Wilson exhibited ripe specimens of Diospyros Kaki, a fruit much grown in Japan, where varieties of it are very numerous, and highly valued. They have a flavour somewhat like that of Apricots, but have an astringent after-taste. The fruits shown were nearly 3 in. in diameter; they had an oblate or depressed form, and a soft, orange-yellow skin, faintly marked with longitudinal sutures. The tree is dwarf in habit, with broad, leathery foliage, and is eminently ornamental in an orchard-house or conservatory, where it succeeds well and fruits freely.—T.

Saxifraga japonica.—There are many handsome autumnal flowers, but few excel the Japanese Saxifrage in beauty and grace. It succeeds best as a pot plant, left undisturbed for two years. It has large, glossy, dark green leaves which remind one of those of Dondia epipactis, out of which spring many tall and branching stems of feathery white flowers. The four upper petals are short and nearly even in length, but the lower one is lengthened out into a tail-like appendage, which gives the flowers the appearance of a bird of paradise in full flight. A pot of it with seven spikes of bloom has been in great beauty in my room for the last three weeks.—H. Harpur Crewe.

Flame-flowers in November.—The most brilliant effect we have noticed in any English garden in November is now furnished by a large number of plants of the late-flowering Tritoma in Messrs. Backhouse's Nurseries at York. The numerous showy spikes of bloom, seen in the bright sunlight of last Tuesday morning, formed a picture which was startling from its gorgeousness, and very remarkable considering the place and time. What charming effects might be obtained by the tastful association of this plant with the Pampas Grass, the fine hardy Asters, and the best late flowers of the year! The name usually given to this late-flowering form is Tritoma Uvaria grandiflora; it is taller and later than T. Uvaria, and has greener leaves. It is well known in nurseries of herbaceous plants, but we have never seen it in such profusion before. Although so late, it is also a prolonged bloomer, some of the flower-stems having borne blossoms for about 2½ ft. of their length, and they are yet in good bloom. When even our hardy trees and shrubs and native plants have succumbed to the long nights and increasing cold, it is interesting to notice this Cape plant so full of vigour and beauty.

Heavy Pine-apples.—Mr. C. Ross, Welford Park, Newbury, showed last Wednesday four remarkably handsome, smooth-leaved, Cayenne Pine-apples grown from suckers potted in 6-in. pots in June, 1875, and shifted into 11-in. pots in April, 1876. Their weights were as follows:—7 lb. 4½ oz., 8 lb. 5 oz., 9 lb. 2½ oz., and 10 lb. 5½ oz.—S.

Wallich's Indian Lily (Lilium Wallichianum).—In our account of this Lily (see p. 426) we unfortunately omitted to state that the coloured plate was prepared by Mr. F. W. Burbidge from a plant furnished by the Rev. A. Rawson, of Bromley Common, Kent. We may remark that the plant is an extremely variable one, its nearest affinity being L. neilgherrense, to which some of its forms approximate very closely.—V.

Late Grapes.—One of the most striking features in the way of fruit at South Kensington the other day was a splendid collection of Grapes from Mr. Wildsmith, gardener to Lord Eversley at Heckfield, who had excellent clusters of Alicante, perfect in berry and bloom, and Lady Downes Seedling, also well finished. Trebbiano and Burchardt's Prince were likewise represented by large bunches, as were Mrs. Pince's Black Muscat, Muscat of Alexandria, and Raisin de Calabre; and there were enormous clusters of Barbarossa (well coloured), White Nice, and the best Gros Colman we have ever seen, the berries being mostly over 1 in. in diameter. Mr. Wildsmith likewise showed excellent bunches of White Tokay, each bunch being almost faultless, as were also Bowood Muscat—in all, thirteen sorts; and it would have been difficult to have found at this season finer bunches than those shown of Gros Colman, Alicante, and Barbarossa.—F.

Palms hardy in Yorkshire.—It is very interesting to notice how freely the Chamærops excelsa thrives in Messrs. Backhouse's Nurseries at York, where two specimens are planted near the offices. Year by year these grow taller and stouter without showing any signs of suffering from high winds or cold, as specimens of the same kind planted in more southern gardens sometimes do. The fact that these plants have done so well and for so many years is proof sufficient that with ordinary care in the selection of soil and position, this graceful Palm is perfectly hardy in our gardens, and may be used with as much certainty that it will produce its full effect in good time as any long-proved tree or shrub. High winds injure it more than cold, but it is easy so to place it with regard to surrounding vegetation or objects that prevailing winds can have little effect on it.

Strawberries in November.—Mr. Bennett, of Rabley, has already commenced to send ripe, forced Strawberries to Covent Garden market, and his first fruit, sent last week, realised remunerative prices. The variety grown is Garibaldi, a specimen of which, bearing ripe fruit, was exhibited at the last meeting of the Royal Horticultural Society at South Kensington. Mr. Bennett states that he has 200 plants coming into bearing, which, together with others in reserve, will continue to produce fruit from now until next May. Mr. Lee, of Clevedon, has just sent us Strawberry plants from the open air bearing ripe fruit and flowering profusely, and we have eaten excellent fruit of the Alpine varieties, gathered from the open ground in September, and this is a usual thing in French gardens, where the Strawberry season lasts from May until September. On the Andes of Quito, in a mean temperature of about 60°, ripe Strawberries are obtained all the year round, and it now seems probable that the same result may be realised in this country.—W.

Apples Grown on the Paradise Stock.—Mr. Roger Leigh, of Barham Court, showed at South Kensington, on Wednesday last, such a collection of dessert and culinary Apples grown on this stock as one rarely has an opportunity of seeing. Among the dessert varieties were King of the Pippins, Cox's Orange Pippin, Ribston, and others, not only large but especially handsome, owing to their fine colour; while the culinary sorts, such as Belle du Bois, White Calville, Reinette du Canada, and others, were remarkable for their great size. We have on several occasions alluded to Mr. Leigh's system of culture, which simply consists in growing the trees in bush or cordon form on the true Paradise stock and in good soil. The fruit thus produced in a Kentish garden is fully equal to the best samples grown on the Continent, a noteworthy fact, and one well worth the attention of cultivators, and especially of those who grow fruit for market.—B.

THE FLOWER GARDEN.

A JAPANESE IRIS.

(I. LÆVIGATA).

This is a very distinct and handsome herbaceous plant characterised by the peculiar drooping aspect of its outer petals, and further interesting as being the seed parent of one section of the race of showy Irises now grown in our gardens under the name of I. Kæmpferi. In Japan I. lævigata has long been cultivated as a garden plant, and it is said to be indigenous to that country, whence it was sent to Europe by Von Siebold, and flowered in M. Verschaffelt's Nursery at Ghent, in 1857, at which time, as we learn from the "Botanical Magazine," (t. 6132), it was figured in "L'Illustration Horticole." Although naturalised in, if not actually a native of Japan, it is also found in Eastern Siberia, Dahuria to Kamschatka, the Amur district, and Karea, and thence it appears to extend to the northern parts of Japan. The flowers, which measure 3 in. to 4 in. across the fall petals, are of a rich violet-purple colour, and have a golden crest towards the centre, while the inner petals are smaller in size, of a paler colour, and stand erect in the centre of the flower. The varieties of I. Kæmpferi

Iris lævigata.

(see The Garden, Vol. IX., pl. xxi) differ from this plant only in having broader, less-drooping petals, and in some forms the three inner petals are equal in size to the outer ones; the flower in that case assumes a regular shape not unlike that of some of the large six-sepalled kinds of Clematis of the C. Jackmani type. This Iris bloomed at Kew some little time ago, and as an ornate border plant it well deserves culture in deep rich soil. All the varieties of I. Kæmpferi (I. setosa of Pallas) are readily propagated by seed sown as soon as ripe in a greenhouse temperature, and the seedlings thus raised generally flower when two or three years old, their colours being as variable as those of the so-called English Iris (I. xiphioides), many forms of which were successfully raised from seed by the late Mr. W. Masters, of Canterbury, these being fully equal to the kinds imported from Holland. All the species of Iris are so beautiful and seed so freely that cultivators should have recourse to that way of raising them. If that were done we should soon have some charming variations from existing types. B.

Round-leaved Speedwell (Veronica pinguifolia).—This proves to be one of the best, neatest, and hardiest of all rock-garden plants. It is a New Zealand dwarf, shrubby species, forming close little bushes of silvery leaves. In Scotch gardens it is particularly healthy, as, indeed, it seems to be in all parts of the country.—J. O.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Though flower gardens begin to be comparatively unattractive, yet they are still enlivened by a few brightly-coloured blooms, and amongst these may be mentioned the various kinds of Russian Violets, double Daisies, Polyanthuses, the beautiful golden-yellow flowers of Sternbergia lutea, and one or two kinds of Christmas Roses. The latter daily open their buds in abundance, especially the Great Christmas Rose (Helleborus maximus). In addition to being ornaments to

Helleborus fœtidus.

the flower borders, the single-Rose-like blooms of these plants are invaluable for cutting, a condition in which they last for a considerable length of time, especially when gathered with long stalks and inserted in water, and should severe weather set in a cloche or hand-glass placed over the plants will insure their perfect development. Schizostylis coccinea continues to be most useful at this season, and although in cold districts it often flowers too late to be attractive in the open ground, yet with a little extra care and attention with regard to situation, soil, and culture, its bright crimson-scarlet flowers may generally be secured until near the end of November. Tritonia aurea is another valuable, late-flowering, bulbous plant which has been exceptionally good this season, having produced an abundance of bright flame-coloured flowers for the last three months, and even now they are in good condition, as are also those of the blue and white varieties of Lobelia syphilitica and the compact, pink heads of Armeria

Helleborus purpurascens.

cephalotes. Aster grandiflorus is likewise just now beautifully in bloom, its stiff, wiry stems being loaded with showy violet-coloured blossoms, rendering it one of the most valuable of early winter-blooming plants, and one that no flower border should be without. The same remark also applies to the pretty red-flowering Wood Sorrels, Oxalis Deppei, O. Bowei, and O. elegans, which will keep on blooming freely until frosty weather sets in. Planted among stones in a low cold frame in front of an Orchid-house, we have seen O. Bowei one mass of crimson flowers, each blossom being as large and as round as a shilling.

SPARAXIS PULCHERRIMA.

This most beautiful as well as exquisitely graceful Cape Irid has for the last six weeks been the admiration of every one who has seen it growing as an isolated specimen on a Grass plot in front of my house, where its tall and graceful flower-stems, rising to a height of from 5 ft. to 6 ft., wave about when agitated by the wind, but are of so tough and wiry a character, that they are never broken in a storm (as the much stouter and stronger-looking, but in reality far more brittle, stems of the Gynerium argenteum, or Pampas Grass, so frequently are), but continue to produce their lovely deep rosy-purple Foxglove-shaped bells on almost invisibly fine wire-like lateral foot-stalks for from six to seven weeks. To the well-known nurserymen, Messrs. Backhouse, of York, are our gardens indebted for the introduction of this beautiful and perfectly hardy plant, which bloomed for the first time in their nurseries in the autumn of 1866. It is well figured in the Bot. Mag., vol. xcii., plate 5555, where those of your readers who have not yet seen it may make its acquaintance and form a fair idea of its graceful and elegant beauty. I have likewise bloomed two other varieties of this family also received from Messrs. Backhouse, and they, too, are well worthy of cultivation, though perhaps not so conspicuously beautiful as the type variety; they are named respectively S. Thunbergi, a kind that produces pale pink and white bells, which are smaller in size and which expand much more fully than those of S. pulcherrima, and come into bloom in July, and S. atropurpurea, with deep, claret-coloured bells of the same size as those of the type, and which come into flower in the month of August. I have also received from Mr. A. Roozen, of Haarlem, two more varieties, named respectively S. reflexa and S. violacea which I have not yet bloomed, but which I hope to see in that condition during either the next or following summer. There is still a sixth variety, S. pendula, figured in Edwards' Bot. Reg., vol. xvi., plate 1360, with small lilac flowers, which I have never seen offered in any catalogue, or even heard of as being in cultivation anywhere; I shall be much obliged to any of your correspondents who may kindly inform me where I can procure this variety. W. E. G.

TEA-SCENTED ROSES.

Many of these are still in great beauty in the north of England, late even as the season now is for Rose blooms. Tea Roses may be budded on the Brier as successfully as Perpetuals. Some are, however, too tender for outdoor culture, but we have many varieties raised from seed of Gloire de Dijon which are quite as hardy as the Hybrid Perpetuals. Strong-growing sorts must be selected for standards, but the more moderate growers may be worked on Briers from 6 in. to 2 ft. above the ground. These may be potted and placed in a pit or cold frame during the winter. Tea Roses generally grow and bloom so freely that the sap is nearly always in motion, and it is partly on this account that they get injured by frost; they grow so freely, particularly in the autumn, that much of the wood that is made does not get ripened. Various plans have therefore been tried to stop their growth in autumn and winter. One consists in cutting the roots and lifting the plants with a strong garden fork as much as will be sufficient to stop the root action; but undoubtedly the best plan is to nip out the tops of all growing shoots in November, and at the same time to cut off every Rose and bud found upon the tree—operations which induce it to rest, and which cause much of the wood to ripen, and in that way withstand the effects of frost. It is even good practice to nip out the tops of Hybrid Perpetuals which are found to be growing vigorously in November. All dwarf Tea Roses are best taken up this month, potted, and placed under glass in a pit or cold frame. In May they may be planted out again. The following make good standards, and need no protection, being quite as hardy as most of the Perpetuals, viz., Cheshunt Hybrid, Belle Lyonnaise, Adrienne Christophle, Gloire de Dijon, Comtesse Ouvaroff, Madame Emile Dupuy, Madame Levet, Madame Ducher, La Tour Bertrand, Triomphe de Guillot Fils. The following Noisettes have been proved to be perfectly hardy, viz.:—Reine des Massiffs, Bouquet d'Or, Madame Caroline Kuster. As half-standards the following can be recommended, but they will want a little protection, viz.:—Comte de Paris, Safrano, Abricoté, Madame Villermoz, Madame Berard, Souvenir d'un Ami, Devoniensis, Madame Falcot, and the fine new yellow Rose, Perle des Jardins.

Fencote, near Bedale. Henry Taylor.

Narrow-leaved Candytuft (Iberis sempervirens).—This has been cultivated in our gardens since the year 1731, and is truly a beautiful plant, flowering as it does during the early summer months, being then literally covered with snow-white blossoms. It is usually seen in irregular rounded masses about 3 ft. or 4 ft. in diameter, and from 10 in. to 12 in. in height. Old plants of it are not unfrequently seen in a bad form, in consequence of the lower branches being annually cut round with the spade while the ground is being dug. In a garden recently visited at Brunnington House, Corstorphine, near Edinburgh, numerous plants of this Candytuft are arranged at equal distances along the centre of the flower borders, and are annually cut over with a pair of shears, the operation being performed as soon as the flowering is past. These plants now form beautiful green pyramids 18 in. in height and 16 in. in diameter at the base, and when in blossom are certainly very attractive. This style of cutting Candytufts may not be new, and it may be considered by some as a little unnatural, but when compared with a number of plants seen in gardens in an uncut condition, it would seem well worth imitation. —M.

Violet, Prince Consort.—Mr. Lee, of Clevedon, the raiser of this superb Violet, and also of the fine Victoria Regina, has kindly sent me a box of flowers of his Prince Consort to compare with the flowers of Victoria Regina of my own rearing. What The Czar is to Devoniensis, and Victoria Regina to The Czar, so is the Prince Consort to Victoria Regina. The blooms sent are remarkably fine, the petals broad and of great substance, and the colour a rich bluish-violet, decidedly more lively than that of The Czar, while it is richly perfumed. Although the superiority evinced by the Prince Consort to Victoria Regina is not great, it is marked, but its real advance is quite manifest when compared with either Devoniensis or The Czar, and forcibly illustrates what may yet be accomplished by careful selection and culture. Mr. Lee is to be congratulated on the progress he has made in this direction, for his two beautiful varieties (Prince Consort and Victoria Regina) will soon be universally grown. Victoria Regina has been blooming here for several weeks, and a quantity of fine plants lifted into 6-in. pots promise to furnish a supply of blooms all the winter.—A. D., *Bedfont, near Hounslow.*

Wall Gardening in Towns. — While passing through the town of Nottingham the other day I was much pleased with the system of growing plants which is adopted on the outside of the Municipal Offices. The building is of considerable length, and a stone projects from the floor level of the second story, about 18 in. from the wall. The whole length of this is covered with a box about 18 in. deep, and the front nearest to the street is faced with virgin Cork bark, placed roughly in an upright position. The box is filled with soil and planted with Aucubas and other evergreens, and there are small plants of the finest variegated Ivies, hanging over the edge. The whole adds so much to the beauty and appearance of the building that the style is well worthy of imitation in other places. I suppose the shrubs as at present located will only be the winter occupants, as flowering plants can easily be planted for summer decoration; and if it be not already done I would suggest that a few bulbs of Hyacinths, Tulips, &c., be placed amongst the shrubs to bloom early in spring.—G., *Derby.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Spring-flowering Bulbs in Unused Spaces.—Between the stones in the steps of the rock-garden at Edinburgh, in the angles formed by stones and walks, in spaces between plunged pots of Alpine plants, and in small plots of Grass, Mr. McNab plants Scillas, Snowdrops, and the like in abundance, and thus gets a charming effect in spring from spots previously without flowers. This plan deserves to become popular.—V.

Lilium candidum marginatum as a Variegated Edging Plant.—This Lily, when planted rather thickly, forms a good winter edging to beds or borders, its long, graceful, yellow and green striped foliage rendering it useful for that purpose. It requires a deep, well-drained soil, and a light, open situation, in which to grow. This variety is quite distinct from L. maculatum, for which it is often mistaken.—S.

Hybrids from the Alpine Pink.—Mr. Issac Anderson-Henry, of Edinburgh, has raised some interesting hybrids between the Alpine Pink (Dianthus alpinus) and D. Heddewegi. Some of them approach the Sweet William in size, but have the deep shining green of the Alpine Pink. Some, on the other hand, are smaller than the Alpine Pink. However curious this kind of hybridization may be, we hope there may be a limit to it, otherwise there will be so many intermediate forms that we shall probably find it difficult to recognise old friends among them.—V.

Bambusa Ragamowski as a Hardy Border Plant.—Large tufts of this Bamboo have been growing in the open ground in the Wellington Nursery for the last three years. The plants do not grow more than 12 in. or 15 in. high, and their handsome foliage—which continues fresh and green through the greater part of the winter—renders them useful for furnishing beds or borders, as well as for cutting to intermix with flowers in vases, for room decoration.—S.

THE FRUIT GARDEN.

ORCHARDS BEST FOR HARDY FRUITS.

In nearly every kitchen garden, new and old, hardy fruits are grown in some form or other round the borders of the vegetable quarters, and kept within moderate bounds by a restrictive system of training and pruning; but whether such an arrangement is good and profitable is a matter beginning to be doubted. Probably no more suitable situation could be found for espaliers and cordons than the walk borders of the kitchen garden; but trees of a standard or bush form are out of place there in more ways than one. In the first place they interfere with the cropping, and necessitate an amount of attention as regards the digging, hoeing, and keeping of the borders, that add considerably to the expense of culture; and, moreover, they are in hundreds of cases ruined by the mutilation process to which they are subjected, both root and top, in order to keep the trees within bounds. Trees within walled gardens are usually supposed to receive more attention and higher culture than those in ordinary orchards, and this is doubtless true; but though we admit that such trees bear good, and perhaps the best, fruit when well managed, they are not more favourably situated for any purpose than they would be in a field, putting other considerations aside as regards the space occupied and the necessity of enclosing a much larger area of ground with walls principally on this account. I am acquainted with kitchen gardens in which several thousands of feet of fruit tree borders, 12 ft. wide or more, are enclosed within the walls, and which are never cropped with anything but the trees throughout the year. In the case of a 4 or 5 acre garden, this is no inconsiderable amount, and if the trees always bore a fair crop, there would not be so much to complain of; but it has been found that the pruned bush trees of kitchen garden borders are least prolific, and generally much behind well-managed orchard trees in that respect. In one garden to which I could point it was noted that during eight years hardly one really good crop of fruit all over was gathered within the walls, but that an orchard of moderate extent, and which cost not a tithe of the expense in pruning and training, &c., afforded the main supply, particularly in bad seasons. Indeed, it may be said that the establishment is ill supplied generally which depends entirely upon the trees within the kitchen garden. I do not of course condemn any of the systems of culture usually practised, at least in principle; but I do say that in many private gardens nothing like an adequate return is produced for the trouble and outlay which they entail. It is my opinion, and also that of many others, that the finest trained and cultivated trees represent only so much wasted energy, if they do not repay the attention bestowed upon them, and that the simplest system of culture is the best and most remunerative. Dwarfing stocks let us have by all means, and restrictive systems of training, if desirable; but the less troublesome and complicated the mode of culture the better. As a step in this direction, I would therefore suggest that the culture of bush or standard trees be abolished within kitchen garden walls, and confined to the fruit garden proper. There is no obstacle whatever to the culture of bush, pyramid, or standard trees in orchards. Let the trees be planted in lines and arranged according to their sizes and shapes, and lay the ground down in Grass in the ordinary way. Such a garden would at all times be interesting, and the labour bestowed on digging, hoeing, and cleaning would be to a great extent saved. If we desire to utilise to the utmost our dwarfing stocks, the utility and importance of which for Apples and Pears are just beginning to be understood, we must not content ourselves with growing miniature rows of fruit trees where vegetable crops would be more remunerative, but plant trees in quantity—as a field crop, for example—and give them a chance to extend themselves as much as they will. I am aware that there is a growing fondness for mulching the roots of both Quince and Paradise stocks, both being surface rooters, and I agree that this practice can be carried out most conveniently in cultivated ground; still, a Grassy surface would be no hindrance to top-dressings if they were required, but the Grass sward itself would, to a great extent, serve the end of a mulching. CHEF.

GOOSEBERRIES AND CURRANTS.

These are often grown in rows between the vegetable quarters in kitchen gardens, or along the sides of the walks, as a hedge; but this is not a good plan, for they not only occupy more space when so arranged, but are far more difficult to protect from birds and vermin than they otherwise need be. One of the best arrangements which I have seen was planting all the early Gooseberries on an early Cherry wall border, and the late Gooseberries (Warringtons) on the Morello Cherry border; thus two birds were killed with one stone, for the same net protected both Cherries and Gooseberries, one side of the net being tacked to the top of the wall, and the other to a low rail in front of the border, but high enough to clear the bushes and permit a man to go underneath conveniently. The bushes that cannot be accommodated in this way should have a quarter to themselves. Gooseberries may be planted so close as nearly to touch each other, but Currant bushes should be allowed 5 ft. or 6 ft. between the rows. At first, however, young trees may be planted twice as thick as this, and every other bush can be removed and planted elsewhere when they get too crowded. For protection, the best and most economical way is to run a rail round the quarter, 5 ft. from the ground, with other rails at intervals between, and to stretch a net over them and peg it down at the sides. It is not advisable to lay the net on the bushes themselves, as it injures the shoots, interferes with the gathering of the fruit, and the nets themselves are soon destroyed by being pulled about. Cropping between the rows of fruit bushes is not a good practice; let them have the ground to themselves, if they have less of it, and take the vegetables elsewhere. Neither is it advisable to dig the ground much, with either spade or fork, about Gooseberry or Currant bushes; for, as the roots are not deep, they are sure to suffer more or less from mutilation. Decayed manure may be forked in a few inches deep, but at other times stirring with the hoe and mulching are all that is necessary. The trees often suffer severely in dry seasons, green fly and honeydew doing much injury; but a good thick mulching of rotten leaves or short Grass will mitigate both greatly if put on in time, and materially help the swelling of the fruit. In any extensive garden, a portion of the north wall should be set aside for Gooseberries and Currants. Both do well trained vertically, allowing about 4 in. or rather more between the branches. Indeed, hardly any fruit is more deserving of wall culture; for the trees never fail to bear, while the fruit can be kept till November if netted or matted up. In planting a Gooseberry or Currant wall young vigorous plants should be selected, and it is needless to say that a good soil gives them a vigorous start, and sends them to the top of the wall sooner than they otherwise would be; 2 ft. or 3 ft. between the plants is sufficient, and usually as many branches as are wanted can be originated the first year, and the process of covering the wall goes on rapidly. The leading shoots should not be shortened at all, or at least very little; but all others that grow out from the sides of the shoots should be spurred in to a few eyes every winter. Carrying the leader forward, in fact, and spurring the other shoots, is all the training needed.

C.

GRAFT HYBRIDS.

A knowledge of the want of permanence of character in varieties of fruit, when propagated by grafts or buds, seems to have been known to Knight, who wrote as follows on the subject as long ago as 1815:—New varieties of fruit are generally supposed by gardeners to be obtainable from seedling plants only, and every part of each seedling tree, which has been detached as a graft or bud, is usually believed to be capable of affording fruit of the same kind, if subsequently grafted upon the same stock and cultivated in the same manner. This opinion I also formerly entertained, though I was always at a loss to account for the existence of many kinds which were obviously different, and which yet much more closely resembled each other than any varieties which I had ever been able to obtain from seeds; but I am now satisfied that many varieties of fruits, which are supposed to be totally distinct, have been propagated from branches of the same original tree; and that few, if any, varieties of fruit can, with strict propriety, be called permanent, when propagated by buds or grafts. I have witnessed many instances of the variations above mentioned, but the most extraordinary of these occurred in my own garden. A tree of the Yellow Magnum Bonum Plum, which was forty years old, had always borne fruit of the usual colour; but, in the last year, one of its branches produced red fruit in every respect perfectly similar to the well known Red Magnum Bonum Plum. I had also, some years ago, a May Duke Cherry tree, one branch of which constantly produced oblong fruit, that ripened later than the produce of the other branches of the same tree, and was of greater weight but of inferior excellence. I am confident that neither of the branches above mentioned had

sprung from an inserted bud or graft; and I therefore cannot hesitate to decide that the Red Magnum Bonum Plum is a variety only of the Yellow. The D'Auch Pear I also conclude to be a variety of the Colmar; the large Swan's Egg, a similar variety of the small; and the two kinds of St. Germain Pears to be varieties only of each other. The Green Gage and other Plums, and the Nonpareil and Golden Pippin and other Apples appear to have sported considerably in variety in this way; and I therefore wish to point out to those who are in the habit of raising fruit trees the necessity of selecting their grafts and buds from such trees only as are found to afford each variety of fruit in its greatest state of excellence, or from such as may happen to present any valuable peculiarities of character.

In the following, taken from the "Florist," Mr. Wighton, of Cossey, near Norwich, takes an opposite view of the matter:—I once grafted a scion of the Northern Spy Apple on a branch of Braddick's Nonpareil, with the view of testing the common opinion that grafting a bad-bearing kind on a good one will render both equally prolific; but after several years' trials, not only in this case but also in others, both of Pears and Apples, I found it was all in vain, the reason being that neither the sap-vessels nor the texture of the leaves undergo change by the process of grafting. I once had a large solitary spur of the Hawthornden Apple from a bud inserted into a branch of an espalier tree. The spur produced fruit true to its kind, and so did the spurs on the other parts of the branch; those on the latter being red, were readily seen both before and behind the Hawthorndens. The result could not be otherwise, because the crude sap from the roots is not changed into proper nutriment until it has passed through the leaves; and moreover, it is during its descent in the vessels between the pith and young wood that each variety is supplied with its proper nutriment, which keeps it true to its kind, while at the same time fresh layers of wood are added to the whole tree. These remarks apply also to all kinds of grafting and budding, on whatever kind of stock. I think I have seen it mentioned that there has been too much heed paid to the operation of repeated grafting on stocks with the view of producing fruitfulness. Howbeit, there is one thing in favour of the process, namely, that in this way scars or wounds are formed on the bark, and these serve to check the flow of sap; but in cases of too rank growth, may not the same be effected by merely ringing or cutting the bark, a plan well known to our forefathers?

A Mode of Destroying the Phylloxera vastatrix.—At a recent meeting, M. Gachez informed the Academy of Science that for the last two years he has been in the habit of sowing red Indian Corn in the spaces between the Vine plants. The latter were infested with the insect when he first planted the Maize, but as soon as the latter went on growing the Vines began to look healthier. M. Gachez having repeated the experiment under the most diversified circumstances the result was also the same; the Vine next to the Maize in every case was exempt from Phylloxera. On pulling out the Indian Corn its roots were found to be covered with "Vine lice," which had no doubt been attracted by the saccharine matter in that cereal.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Knight's Monarch Pear Ripening Prematurely.—Can any of your readers say why this Pear should be ripe now? We have usually had it in fine condition for Christmas and the New Year, whilst this season every fruit is now "dead ripe."—W.

Melon Splitting.—"P. P. B.," (see p. 436) has been giving his Melons too much water at the roots, which has caused the splitting. The evil is seldom caused by atmospheric moisture; indeed, never till the fruit is within a day or two of maturity; but a sodden state of the soil will induce splitting before the Melons have completed their swelling.—W. W. H.

Lord Palmerston Peach.—My experience of this Peach is very different from that of Mr. Fennell (see p. 436). We have grown it here ever since its first introduction, and for a late Peach (beginning of October) it has no rival, being very large and fine in colour, and for its season not by any means second-rate in flavour. I have heard others complain of it, but on our dry, warm soil it has ever been first-rate—quite equal to Walburton Admirable.—W. Wildsmith, *Heckfield*.

Mrs. Pince's Black Muscat Grape.—I quite agree with Mr. Gilbert (p. 402) that we should not be too ready to condemn a new Grape, for, doubtless, many are discarded without being properly tried; still I do not approve of the practice of recommending a Grape when it has failed, as regards colour, for years (especially with such a skilful grower as Mr. Gilbert), and only proved good once. I have seen more imperfect bunches of Mrs. Pince this season than any other variety. It is a Grape that I should not advise any amateur to plant, my experience of it being that it is one of the worst of setters, and, as a rule, the berries never get beyond a grizzly red in colour; as to its keeping qualities they are not superior to those of any other Muscat.—H.

THE INDOOR GARDEN.

TUBEROUS-ROOTED BEGONIAS.

One great advantage attends the culture of bulbous and tuberous-rooted plants, whether for outdoor or indoor decoration, and that is, such plants generally become quiescent, or fall into a state of complete rest, at the termination of their flowering season, and for a considerable time require little or no attention. Among such for open-air culture are the whole race of Dahlias, the different kinds of Gladioli, &c.; while for indoor decoration we have the Achimenes, the Caladium, the Gloxinia, and many others. The genus Begonia, too, now a very important one both as regards flowering and fine-foliaged plants, is divided into numerous distinct groups or species, many of which, although structurally dissimilar, will, nevertheless, unite or blend freely with each other. In a batch of seedling plants raised from a single bloom of Begonia longifolia, which had been fertilized by the pollen of Begonia Herri, a smooth-leaved variety, the young plants which have not yet bloomed have, nevertheless, more or less the glabrous foliage and the habit of growth of the pollen parent, while none of them in any appreciable degree resemble the seed-bearing plant, thus furnishing a very remarkable instance of prepotency in the male element. Although Begonia tuberosa was introduced to this country from the West Indies at an early period of the present century, the plants in question probably owe their origin to a blending of the more recently introduced species such as B. boliviensis, B. Pearcei, B. rosæflora, and B. Veitchi. To the last-named species may, perhaps, be ascribed their comparatively hardy character.

The Begonias are what are known as Monœcious plants, that is, bearing staminate and pistillate, or male and female flowers, upon the same plant; consequently, fertilization readily takes place through the agency of insects or otherwise; but plants raised from seeds gathered promiscuously are seldom found to equal in point of merit the plants from which such seed is obtained. The numerous meritorious hybrid varieties now in cultivation have all been obtained by the manipulation of a careful and judicious system of cross-fertilization, and in pursuing this course little if any difficulty is likely to be experienced. Seed so obtained should be sown as soon as it is ripe, and this operation should be commenced at as early a period in the season as possible, in order to give the seedling plants time to form tubers before their natural period of rest arrives: but should the plants be too small to have formed tubers of any appreciable size, it will then be advisable to keep them growing slowly throughout the winter, during which they should occupy a shelf or some such position in a warm greenhouse or similar structure as near to the glass as possible. They should have a moderate supply of water during the winter, and as spring approaches they should be shifted into larger pots according to their growth, and as soon as they come into bloom the best varieties should be selected, while all inferior plants should be at once discarded. It is easy to obtain many beautiful varieties with large, superbly-coloured flowers, double as well as single, but it is exceedingly rare to procure an improvement upon existing varieties. There is, however, a peculiar interest attached to the process of raising plants from seed, more particularly when means have been employed to justify the expectation of securing new and improved forms among the seedlings; and as the tuberous-rooted Begonias generally seed very freely, the raising of them from seed will no doubt continue to be the practice. They are all, however, easily increased by cuttings, which should be inserted as early in the season as they can be obtained, in order that they may, as in the case of seedling plants, have time to form good tubers before the end of the season. The cuttings will strike freely in a mixture of sifted leaf-soil and silver sand, plunging the pots in a somewhat brisk bottom-heat in an ordinary propagating-house or pit, and as soon as they are fairly rooted they should be potted off singly into small pots, to be afterwards removed to their flowering pots, which may be 5 in. or 6 in. in diameter. The pots should be well drained, and the soil or compost used may consist of two parts of rich, light, turfy loam, one part fibrous peat, or a small portion of silver sand; or well-decayed leaf-soil may be substituted for the peat. The

plants may, if desired, be grown into specimens of considerable dimensions, and should, of course, have pots in some degree corresponding to the size of the tubers. Useful decorative plants can, however, be produced in pots not exceeding 6 in. or 8 in. in diameter. Many of the sorts possess the graceful drooping habit of the Fuchsia, and require to be neatly supported by stakes, while their racemes of highly-coloured blooms must be allowed to hang down in festoons. Some of the sorts are also well adapted to the purpose of growing in suspended baskets, in which position they have an exceedingly graceful appearance, and their flowers are displayed to great advantage. The plants generally continue to bloom for a great part of the season—indeed, as long as the plants continue to grow flowers continue to be produced; and, in order to facilitate this, when seed is not required, the female flowers should be all picked off as soon as they begin to show the slightest signs of decay. The temperature of an ordinary greenhouse is found to be that most suitable for them; but they are also found to succeed well out-of-doors when planted upon artificial rock-work and in similar situations, while some of them may ere long be found to be useful as bedding plants in the flower garden. At all events, the ensuing season should not be allowed to pass without affording them a fair trial. In all cases when planted out in the open air, it will of course be necessary to take up the tubers at the end of the season, and winter them in dry sand or some similar material, as this will be likely to prevent them from shrivelling to such an extent as to injure them; they must also be placed out of the reach of frost, for, like the Caladium and other tuberous plants, they may be found to be less able to resist the effects of a low temperature when in a dormant condition than when in full growth. Plants which have been grown in pots are possibly best preserved during winter in the soil, which should be allowed to become somewhat dry—not, however, quite dust-dry, in which latter state the tubers are sure to sustain injury. It is advisable to place the pots containing the tubers upon a cool bottom, such as a bed of cinder ashes or earth, in a glass or other structure from which frost is excluded. In such a situation the soil will be unlikely to become too dry, and if under glass the Begonias may be allowed to remain there until they begin to show signs of growth, which will seldom be earlier than the first week in April; but if it be desired to have the plants in bloom early, the pots containing the tubers may be placed in a growing temperature previous to that time, and sparingly supplied with water until they fairly start into growth. In commencing a collection of these plants it will frequently be found that some of the tubers appear unwilling to grow; in such cases give tubers of that kind the advantage of a slight bottom-heat, and as soon as they are fairly started, they should be shaken from the old soil, and planted in pots corresponding to the size of the tubers, being careful to avoid pots of too large a size for the first shift. As soon as such pots have become filled with roots, and rapid development has taken place, the plants may be shifted into their flowering pots, which should be efficiently drained, in order that liberal supplies of water may be freely given. By starting portions of these charming plants into growth at various seasons, it is possible to have them in bloom throughout the greater part of the year; indeed many of the sorts, when properly treated, appear to be equally valuable for winter as they are for summer decoration; and it is during the dull winter months that their bright green succulent leaves, and pendent trusses of brilliantly coloured blooms, are likely to be most appreciated for the various purposes of table decoration, furnishing épergnes, vases, &c.

P. Grieve.

Verschaffeltia splendida.

The Texas Love Apple (Lycopersicum texanum).—This, sometimes called Solanum texanum, seems to have been overlooked by ornamental fruit-bearing plant cultivators. It resembles many of the tropical and sub-tropical Solanums in its large foliage, prickly stem, and midribs, and rises about 2 ft. In shape the fruit is very like some of the more evenly-ribbed Tomatoes, but is of a much firmer substance; it is of a very brilliant orange colour, which, together with its freshness, it retains for a long time if kept in a warm greenhouse.—J. M.

A STATELY FAN PALM.

(VERSCHAFFELTIA SPLENDIDA).

This is one of the most strikingly handsome of all the nobler-habited Palms—or rather of such as are of stately port when in a comparatively young state—and as such it deserves culture wherever space is at command in either a plant stove or warm conservatory. On the Continent and also in this

country, this Palm may be plunged out-of-doors on warm and sheltered parts of the lawn during the summer months. The accompanying engraving, indeed, shows a plant under such circumstances; but in exposed positions its leaves, like those of the tropical Musas, are apt to get lacerated by high winds. The only method of propagating many of the most handsome Palms, of which this is an excellent example, is by means of seeds, and as these are never produced on cultivated plants in this country, they have to be imported, and even then only in small quantities; so that this really handsome plant is far from being so commonly met with as its distinct habit and ample leafage would seem to render desirable. Well grown specimens of it, such as that shown in the annexed illustration, have stems from 4 ft. to 6 ft. in height, terminated by a crown of gracefully arching fresh green leaves of a parchment-like texture. The somewhat spindle-shaped stem is thickly beset with long sharp-pointed black spines, and is itself, as will be seen, elevated above the ground-level by means of strong buttress-like roots, similar to those thrown out by the larger-habited Screw Pines or species of Pandanus. The plant grows well in an open compost, consisting of fibrous loam, peat, and coarse sandstone grit; and when making its growth it requires a copious supply of water. B.

COTTAGE GARDENING.

Potatoes.

The advantages of relying chiefly upon such Potatoes as can be lifted and stored by the end of July or beginning of August, has this season been self-evident, so far as this district is concerned; for, amongst late kinds, at least three-fourths of the crops are so bad as to be almost unfit even for pigs. Crops that were lifted a month ago, and which then appeared sound, are now a mass of rottenness; but fortunately the second early kinds produced abundantly, and amongst them there is not much disease. It is, perhaps, of little use mentioning kinds, as everybody has some favourite sort. With us the following have been good, and mostly free from disease, having been lifted before any symptoms of it appeared, viz., Ashleaf, Myatt's Prolific, Early Rose, Snowflake, Late Rose, Fenn's Bountiful, Early Market, Rector of Woodstock, Early White Kidney, Porter's Excelsior, and Wheeler's Milky White. What is really wanted (and Potato raisers should bear this in mind) is a race of good keeping Potatoes that will complete their growth by the end of July, so that they may be lifted, dried, and stored before the disease appears. By planting on the driest pieces of land, and as early as is consistent with safety from frost, by carefully selecting and frequently changing the stock of seed, and by using forcing or stimulating manures to push on the crop during its short season of growth, something may be done to mitigate the disease; but, after all, the main remedy will probably be found in growing early-ripening kinds, by giving them plenty of space, and fairly liberal treatment. I have never found much advantage from planting in poor land without manure. I formerly had an idea that medium-sized whole Potatoes were best to plant, but recent experiments have shaken my confidence in planting whole Potatoes. I believe that large ones, cut into single eyes, will furnish a better return than planting whole tubers; moreover, and this is of some importance, the crop will be fit to dig at least a week earlier, a circumstance for which a reason is not far to seek, inasmuch as one strong stem from each set is better than a cluster of weakly ones; the former will produce on the average from four to six good-sized tubers, whilst the latter will yield a host of small Potatoes, in addition, perhaps, to one or two good-sized ones. The crown eyes are better and more prolific than those produced on the sides of the tubers. Seed Potatoes should never be stored in large heaps; the best way is to lay them out thinly in shallow boxes or on shelves in some building from which frost is excluded. Where space for this cannot be afforded, the heaps should be as small as possible, and should be frequently turned over to keep growth in check. A heap of Potatoes, even if small, will generate warmth, and if not moved occasionally will grow, and that will weaken them for seed purposes. It is not advisable to cut the sets more than twenty-four hours before planting time or they will shrivel, and the growth will be thereby weakened. It is a good plan to lay the tubers out thinly somewhere to sprout, and then to select and cut out the strongest eyes only for planting. A little extra care in this way will not be altogether labour or time lost. All land intended for Potatoes should be worked and exposed to the weather as much as possible during autumn and winter; heavy land might be manured at the same time, and be thrown up into ridges. If these be 2½ ft. wide, in spring the Potatoes may be laid in the hollows, and the fresh pulverized soil levelled down over them; light sandy land should be treated somewhat differently, as if too much exposed and dried either by the sun's warmth in summer or dry frosty winds in winter, it loses some of its fertilizing properties. In such cases the manure, which should be thoroughly decayed, should be placed in the drills with the sets. Those kinds of Potatoes that make short, robust tops, are best for small gardens, as they may be planted comparatively close together. All those which I have named produce dwarf tops, but none except the earliest kinds should be planted at a less distance than 2½ ft. between the rows, as this distance leaves space for them to have a second earthing up, leaving a clearly-defined ridge and rather a deep furrow between, which on heavy land (especially if the season be a damp one) is a decided advantage. What is called the Potato disease is pretty clearly proved now to be a fungus called Peronospora infestans, and this plan of giving plenty of space for a good ridge of soil and a deep furrow, helps to drain the water off freely and in some measure retards the progress of the fungus. When whole Potatoes are planted the number of eyes had better be reduced by cutting out all except those in the crown. The best time to plant the main crop is about the end of March or beginning of April. In very late situations, much exposed to spring frosts, the planting might be deferred till the middle of the month of April, but that is quite late enough for any situation, *i.e.*, if the crop is to be fit for lifting before the disease makes its appearance. If a few Potato-tops push through the ground before all danger of frost is over, it is an easy matter to draw a little soil over them. In small gardens, a system of culture commonly practised in Ireland, called the "lazy-bed plan," is well worth a trial, especially in the case of early crops on heavy damp land. It consists in laying the land out into beds about 4½ ft. wide, with 2-ft. alleys between them. The land in this case should be well worked in winter, so as to have it in a thoroughly pulverized condition at planting time. After the beds are marked out the sets should be placed eye upwards, from 12 in. to 15 in. apart, according to the kind. All over the beds a good sprinkling of thoroughly decayed manure, including a little guano or superphosphate if thought desirable, should be spread over the tubers. A mixture of hot-bed or stable manure, burnt earth, soot, lime, and the decayed or charred refuse from the rubbish heap will be found to be a good compost for Potatoes. After the manure has been applied, sufficient earth should be taken from the alleys to cover the tubers 6 in. deep. When they are 6 in. high, another spit may be taken from the alleys (if there be depth sufficient) and placed amongst and around the Potato stems. The advantages of this plan are the deep alleys between the beds, which thoroughly drain them; and as the Potatoes have a greater depth of warm dry soil in which to grow, the disease has a less injurious effect upon them. Under this, however, as under all other systems of culture, the surface must be freely loosened either with hoe or steel fork until the Potatoes are fit for earthing up.

Parsnips.

These require a deep, well-pulverized soil, in which the manure has been deeply buried, or one that has been so highly manured for a previous crop as to require none. If freshly manured, the roots will be coarse and much forked. The Hollow Crowned and Student are the best varieties, and of these seed should be sown in drills 1½ in. deep early in March; the drills should be 15 in. apart, and the young plants, when large enough, should be thinned out to 6 in. asunder. For this, as well as for all other growing crops, frequent stirrings of the surface of the soil between the rows are exceedingly

beneficial. The roots keep best in the ground, or if taken up they should be stacked in a dry place in earth or sand.

Carrots.

The Early French Horn should be sown in February on a warm border in drills 1 in. deep and 9 in. apart. It is not necessary to thin this crop much, as the moment the young plants are as large as one's finger, the largest may be drawn for use. The main crop of James' Intermediate and Altringham may be sown early in April on land that has undergone thorough cultivation. If manure had been used it should have been of the lightest possible description and dug in some distance below the surface. In places subject to the maggot, dress the land in winter with salt, lime, and soot. The two latter may be employed liberally, but salt must be used more cautiously—½ lb. to the square yard will in most cases be sufficient. I have occasionally used much heavier dressings, but we ought to know something of the character of the soil on which we are operating, before applying it in excessive quantities. Gas lime is an excellent material with which to renovate old gardens in which insects are troublesome; it may be applied on the surface now and be worked in by-and-by. It is a powerful stimulant and should be used cautiously. On heavy land, where there is a difficulty in obtaining good Carrots, after the ground has been got into good condition in April set out the rows from 13 in. to 15 in. apart, then make holes with a crowbar 6 in. asunder along the rows; let the holes be 15 in. deep and 3 in. in diameter at the top; fill them up with any light, rich compost (two or three barrowsful will go a long way), drop three or four seeds in the centre, and cover lightly. When large enough to select the strongest, thin out the young plants to one in each hole. This is an excellent way to secure a good crop of clean, well-shaped roots, and the work is not so formidable as it looks. Carrots should not remain long in the ground after their growth is completed, which, in the case of the main crop, will be by the middle of October. The best way in which to preserve them in good condition is to place them in small heaps in the open air, and cover with straw and soil in the same way as Potatoes are pitted. Sow another bed of early French Horn about the end of July to stand the winter in the ground, and be pulled young, fresh, and sweet as required. In case of severe frost a little dry litter should be scattered over them and allowed to remain while the hard weather lasts.

Salsafy.

This root has, when cooked, a strong flavour of oysters, so much so as to have acquired the name of the Oyster plant. It is not much grown in small gardens, but a row or two of it will not occupy much space, and will furnish a desirable change occasionally in the way of vegetables. The roots are very apt to grow forked unless the manure be buried deeply. The best way is to open a trench 18 in. deep, place the manure at the bottom, return the soil, and sow the seeds in a drill 1½ in. deep, exactly over the manure so as to tempt the roots to run straight down to it. The drills may be 1 ft. apart, and the plants should be thinned out to 6 in. asunder. The first week in April is time enough to sow Salsafy; which, if sown too early, is apt to run to seed. The roots keep best in the ground in the same way as Parsnips; and, if a little dry litter be placed along the rows on the approach of frost, they may be lifted as required.

Turnips.

On some soils, raising very early Turnips is a difficult matter, as, when the young plants have passed through the vicissitudes attending their early existence, unless carefully managed, they may run to seed at the very time when they ought to be ready for use. Under these circumstances, unless the land be peculiarly well suited for Turnip-growing, April will be early enough to make the first sowing. All that I have previously written concerning the preparation of land for roots will have special weight in this case, with this addition, that inasmuch as Turnips form their bulbs on the surface of the land, rich surface-dressings of which charred or burnt refuse forms a part will be beneficial to them. A sprinkling of superphosphate applied at the time when the seeds are sown will also make its presence known by pushing on the crop, and should never be omitted where the fly is troublesome. Sow in drills 1 in. deep, 1 ft. apart, and thin the plants out to 1 ft. asunder in the rows. During hot weather, for the successional sowings, the drills should be drawn a little deeper, and they should be thoroughly soaked with water before the seeds are sown. If the latter lie too long in the land, the plants always come patchy and weakly. As regards varieties, there is no better all-round Turnip, for either large or small gardens, than Veitch's Red Globe, and especially for an unfavourable soil in a dry season. Cattell's Silver Ball is a very handsome Turnip for early sowing, and the Chirk Castle Black Stone is very hardy, and may be sown towards the end of July or beginning of August for standing the winter. Where a succession is required, it is better to sow a small bed every three weeks than to sow a large one at long intervals. When the early Potatoes are lifted, Turnips may be sown immediately, without much preparation of the land beyond a sprinkling of some artificial manure.

Horseradish.

This being difficult to kill or eradicate, is generally relegated to some out-of-the-way corner, and seldom has justice done to it in the way of cultivation. There is always a demand for it, and in deep, light soil, if well managed, it would prove a paying crop. The land should be deeply worked, and if manured the manure should be buried deeply. Make holes with a crowbar in rows 18 in. apart and about 12 in. or 15 in. asunder in the rows; the holes should be at least 16 in. deep, and the sets should be dropped into them. The latter should consist of stout pieces of roots, 3 in. or so long, either with or without the crown bud, and the holes should be filled up with fine soil or sifted ashes, the latter being preferable. Another plan is, when taking up the crop to save all the long, slender roots that are not large enough for use, to trim off all the small fibres, make holes with a crowbar of sufficient depth, and at an angle of 45° or so, and drop the roots in so that the crowns are beneath the surface, filling in with ashes or burnt earth. Planting the roots in a slanting direction enables the cultivator, if he feel disposed, once during the growing season to take the crown of leaves in his left hand, and draw the root up so that the pressure is brought to bear in the direction in which it has been planted; the strong fibres that generally start away just under the surface may be cut off, and the crown of the plant returned to its former position and pressed down with the foot. Plant any time in March.

Jerusalem Artichokes.

One cannot help wondering that a plant so prolific, and that can always, under all conditions and circumstances, in any kind of soil and with little attention, be relied on to produce a crop, should have received so little attention as this Artichoke. However, such is the fact; and, except in the gardens of the wealthy, it is almost unknown. They might, however, have a trial, for although probably their peculiar flavour would not suit every taste, yet they might be made into soup or cooked in various ways, and would furnish in the winter a desirable change of vegetables. Doubtless many have condemned them or refused to grow them without really knowing what they are. Plant the sets like those of Potatoes in March either with or without manure, according as the land is good or otherwise, or whether large or small tubers are required. Plant in rows 3 ft. apart, and 12 in. asunder, and 6 in. deep. All that is necessary afterwards is to keep down weeds till the tops get fairly into growth. About July the ends of the shoots may be shortened a little to keep them from flowering and within bounds, and strengthen the crop. Some leave them in the ground altogether, and just dig a few when required. This, however, is a bad practice; they should always be lifted before growth begins. The best-shaped tubers should be selected for use and stored like Potatoes; the others should be reserved for seed.

E. Hobday.

Thinking and Working.—It is only by labour that thought can be made healthy and only by thought that labour can be made happy, and the two cannot be separated with impunity.—John Ruskin.

PLATE XLVI.

THE TILLANDSIAS OR AIR-PLANTS.

(WITH A COLOURED FIGURE OF T. LINDENI).

Drawn by H. HYDE.

CONSIDERING the brilliancy and variety of foliage and flowers displayed by the Bromeliaceæ, the family to which the Tillandsias belong, it is surprising that so few of them are seen in private and public gardens. Amateurs form collections of Orchids, Heaths, Ferns, and other classes of plants, but nobody, in this country at least, seems to have thought of the beautiful plants forming the family in question. Some years ago the Bromeliaceæ at Kew, although not numerous, were in a flourishing condition. At that time they were in one of the old lean-to houses, with some of the Aroids, and being very close to the glass, and subjected to a brisk heat, they appeared to find the conditions suitable to their nature. Since they have been in the Palm-house they have never looked so well, in spite of various alterations in the arrangements to meet their requirements; and it is probable that no one will ever succeed in growing a collection of them to perfection in a large house. Most of the showy species are from tropical regions, and appear to need special treatment. Some few will grow with very little care; but, like Orchids, Bromeliads, to have them in their full vigour and beauty, must be subjected to conditions approaching as nearly as possible to those of their native forests. Of course it is desirable in the case of all plants to give them, as near as we can in our climate, the amount of heat, light, and moisture they enjoy in their natural habitats; but some classes of plants are far less exacting in this respect than others, and will adapt themselves more or less to circumstances. Belgium may be said to be the centre at the present time of cultivated Bromeliaceæ, Professor Morren their particular friend and godfather, and the "Belgique Horticole" their book of portraits. For instance, in the last part of the publication just mentioned three out of five of the plates represent plants of this family, namely, Billbergia nutans, a species not unlike, though not so showy as, one recently exhibited at South Kensington; Bromelia Joinvillei, with spreading, spiny leaves like the Pine-apple, the upper ones bright red, and a nest of bright blue flowers intermixed with white bracts in the centre; and Tillandsia tenuifolia, a very pretty species with slender leaves nearly as long as the scapes of purplish flowers, subtended by red-tipped bracts spotted with white.

The whole of the Bromeliaceæ, without exception, are natives of the New World, that is, of tropical and sub-tropical America and the adjacent islands. One species, Tillandsia usneoides, reaches as far north as the southern parts of Virginia. This is a very singular plant, excessively abundant in the forests of the Southern States of North America, where it literally clothes the trunks and branches of the trees. It has long, thread-like stems, very small leaves, and inconspicuous flowers; and it is used for packing as we use Moss: indeed it is now cleansed and used for stuffing cushions and other purposes. Another species, Puya chilensis (Pourretia coarctata), reaches Southern Chili. It is nearly or quite hardy in the warmer parts of England. Of shrubby habit, it grows 3 ft. or 4 ft. high, each branch crowned with a rosette of tough, linear leaves, from the centre of which spring large spicate panicles 6 ft. to 8 ft. high, of yellow flowers. It has been mentioned that the Bromeliaceæ are peculiar, as indigenous plants, to the New World; and it should be added that several members of this family have become naturalised in tropical Africa and Asia, where in some districts they have all the appearance of being quite at home. But it is in the primæval forests where they abound in the greatest profusion. There they compete with Orchids, Aroids, and the climbers of various families for possession of the trees, the greater part of them being epiphytes. Here are plants that obtain all their nourishment from the atmosphere, falling rains, and the decayed vegetable substances on the trunks of trees. How they obtain some of the mineral elements said to be indispensably necessary to plant-life it is difficult to conceive. It is possible that some of these elements are not absolutely essential to epiphytes—perhaps they may even be injurious. If so, that would explain the cause of many failures where soil or water impregnated with certain metals is used. At all events it would be interesting to get chemical analyses of some of the epiphytal plants. This, however is a digression, though, possibly, a suggestive one. It is true that some Bromeliads will not only retain vitality, but also grow, if only suspended by a thread in an apartment where there is little moisture in the atmosphere—a fact which gave birth to the name air-plants; and many of them will thrive best on blocks of wood in an atmosphere charged with moisture in proportion to its temperature, and, as already observed, a high temperature suits the majority of them. The principal thing to bear in mind is that it is necessary to regulate the degree of humidity according to the temperature. For all plants of this class an excess of moisture in a comparatively low temperature is injurious, and eventually fatal. They will bear a low temperature for a time without harm, and they will bear drought tolerably well; but to ensure success the two factors, heat and moisture, must be delicately balanced. Naturally, then, it follows that they will not bear frequent and considerable fluctuations in temperature, because when the temperature of an atmosphere nearly saturated with aqueous vapour is suddenly lowered, a portion of the vapour is deposited in the form of dew.

The genus Tillandsia is a large and variable one as regards the habit, size, and colouring of the flowers, and some other particulars. Some, like the species here figured, come very near the showy species of Vriesia, whilst others are stemless, tufted plants, with very insignificant flowers. T. Lindeni is itself a very variable but always a beautiful plant. It was discovered by Mr. Wallis, in the mountains of Huanca-bamba, in Peru, and was first offered for sale by Mr. Linden in 1867. In 1869 a figure of one of the varieties was published in Regel's "Gartenzeitung," but in point of beauty it was much inferior to the present one. It may here be incidentally mentioned that Dr. Regel states that this species differs from all other species of the genus known to him in having roots. These plants then, it would seem, in spite of what physiologists say, as well as some of the rootless aquatics, must be able to absorb water through their leaves. To resume, another and a far more brilliantly-coloured variety, as far as the bracts of the inflorescence are concerned, was figured in the "Belgique Horticole" in 1869, shortly after Regel's figure appeared. In this variety the bracts are more highly coloured than in the one portrayed here, being of a deep and brilliant red, changing to yellow towards the base. The variety figured here speaks for itself. Though occasionally exhibited, all the varieties appear to be rare in this country. According to Mr. Linden, it varies to the extent described from seed.

Besides T. Lindeni there are many other species equally as desirable, though less showy. One of the nearest is T. xiphioides figured in the Bot. Reg., t. 105, in 1816, and from a much more luxuriant plant in the Bot. Mag., t. 5562. The flowers of this are nearly a pure white, and described as exhaling a grateful fragrance. The petals are large and spreading, as in T. Lindeni, but the margins are waved and crumpled. In a word, it may be pronounced an exceedingly elegant plant. T. recurvifolia (Bot. Mag., t. 5246,) is a dwarf-tufted species, with narrow, recurved leaves, a few inches long, and short spikes of white flowers, enfolded in rosy bracts. T. pulchella (Bot. Mag., t. 5229) is another tufted species, growing about 6 in. high, with erect or spreading leaves, and very small white flowers, almost concealed in the deep red bracts. T. stricta (Bot. Mag., t. 1529) has bright blue flowers and pink bracts. In this the flowers are larger than in the two preceding, but the petals are not large and spreading like those of T. Lindeni, forming instead a narrow vase-shaped flower, similar to that of a Vriesia. A very different set of species is represented by T. ionantha (Bot. Mag. t. 5892), which is a tufted species, 3 in. or 4 in. high, the leaves overtopping the inflorescence, the upper ones being tipped with red. The flowers are pale violet and rather small, but the plant is a very neat and pretty one, of the miniature type. T. psittacina (Bot. Mag., t. 2841) is a showy species with a tall (18 in. or more high) zigzag flower-scape with distant flowers. The large, horizontal orange and red

THE LARGE BLUE TILLANDSIA. T. LINDENI

bracts nearly envelop the slender white flowers. T. Jonghei ("Belgique Horticole," 1856) has broad flat leaves, the upper ones of a deep red, and tawny flowers. A singular species is T. bulbosa (Bot. Mag., t. 4283). This has a leafy stem, much swollen at the base, like the pseudo-bulbs of an Orchid, and distant round convolute leaves, the upper ones and bracts rosy-red; flowers pale violet, anthers yellow, and stigma green. T. juncifolia ("Gartenzeitung," 811) has long, slender, rigid leaves, considerably overtopping the leafy flower-spike of purple flowers. Besides those mentioned, which form only a hurried selection from a large genus, there are several with very ornamental foliage. These belong chiefly to the set with rosettes of broad, usually-recurved leaves. Of T. acaulis there are several varieties: thus purpurascens has purple leaves; in zebrina they are cross-banded with white and pink. T. musaica is a more recent acquisition, and will be familiar to all those who frequent the principal flower shows.

The plant from which the accompanying illustration was prepared flowered this spring in Messrs. Veitch's Nursery, in the King's Road, Chelsea. W. B. Hemsley.

EXTRACTS FROM MY SEVEN YEARS' DIARY.

By W. DENNING.

November 13.—*Sowing*—Sangster's No. 1, Early Emperor, Little Gem, and Laxton's Alpha Peas. *Potting*—Lily of the Valley, and shifting herbaceous Calceolarias into 6-in. pots. *Planting*—Some Cherry and Rose trees. *Miscellaneous*—Putting in first (700) Asparagus to force, keeping it at from 58° to 60° night temperature; making hot-bed for Rhubarb, Seakale, Lily of the Valley, and Hyacinths in a dark shed; putting Dendrobium Kingianum into Mexican house to induce it to set its flower-buds; putting into heat Cinerarias and Salvia splendens and keeping them at from 55° to 60° at night and from 60° to 65° by day, according to the state of the weather; putting glass over Lettuces for the winter; transferring cases from French Beans to Endive; taking up Salvia patens and getting all Dahlias into a cool, dry cellar; sending away quantities of Roman Hyacinths; putting a layer of fresh soil in second Peach-house to cover manure; making mounds of soil ready for planting Cucumber plants; giving Strawberries a good dressing of burnt earth; carting short Grass from heap to garden for manure; making ground ready for Mint; giving Peach-house and Vinery borders a good scrape, removing all loose surface-soil, and replacing it with a top-dressing of new loam and horse-droppings; clearing dead leaves off bedding Pelargoniums, &c.; pruning espalier Pear trees; getting pit cleaned and white-washed for early spring Cucumber plants; carefully keeping lean-to Cucumber-pit not higher than 68° at night and from 70° to 72° by day with fire-heat, as more warmth seems to induce disease.

Nov. 14.—*Potting*—Japan Lilies in peat and sand, and putting them into cold pits. *Planting*—Box edgings. *Miscellaneous*—Taking up and potting Hollyhocks—any sorts that have not struck freely; arranging Heliotropes, Pelargoniums, and Primulas, and keeping the temperature for them at 50° to 53° at night, to induce them to flower for indoor decoration; putting a batch of Heliotrope into Pelargonium-house every week to get it into flower successionally; turning the manure for first Vinery border, and mixing it with leaves; pruning first Muscats; nipping blooming shoots off Calceolaria cuttings; emptying rubbish yard, and carting its contents to garden to dig in; lowered Orchid-houses to winter temperature, viz., East Indian house, from 60° to 63° at night, from 68° to 70° by day, fire-heat; Cattleya, Dendrobium, Vanda, Lycaste, and Mexican houses, to 55° at night, 60° by day; and Odontoglossum-house, to 53° at night, 60° by day, allowing all to rise a few degrees by sun-heat, and keeping atmosphere moist in all houses after they reach 60°; syringing Odontoglossums three or four times daily, according to dryness of atmosphere.

Nov. 15.—*Sowing*—Early Long-pod Beans. *Planting*—Various kinds of Pears, such as Doyenné Goubault, Easter Beurré, Beurré Rance, Glou Morceau, Doyenné du Comice, Beurré Superfin, and Winter Nelis; also Golden Gage, Transparent Gage, and Early Prolific Plums; Elton, Bedford Prolific, and Belle Agathe Cherries, and Ribston Pippin, Worcester Pippin, King of Pippins, and Irish Peach Apples. *Miscellaneous*—Putting all Cauliflower not fit to cut in cold lean-to house; putting in plants for forcing, consisting of Roman and other Hyacinths, Narcissi, Van Thol Tulips, Persian and other Lilacs, Briers, Azaleas, Roses, Rhododendrons, Rhodoras, Vermilion Brilliant Tulip, Deutzia, and Pinks; tying up Lettuces and Endive in frames to blanch; protecting Globe Artichokes; keeping scented-leaved Pelargonium pit at 50° at night; sending in Zephirin Gregoire Pears; getting Cauliflowers coming in too fast hung up in cellar; getting leaves into forcing pit for bulbs, &c.

Nov. 16.—*Potting*—Young Cucumber plants in 6-in. pots. *Planting*—A border of Lily of the Valley. *Miscellaneous*—Getting Peach trees in pots into their places; top-dressing them with two parts loam and one part manure, ramming the soil down hard; tying espalier Pear trees; laying Broccoli; painting Vines and loosely tying them up ready for starting; fumigating all Orchid-houses for thrips and fly; giving all Cucumbers a watering; sending in Beurré d'Aremberg Pears; putting litter over Lily of the Valley in pots; top-dressing pot Vines with bone-dust, loam, and manure; beginning to manure Asparagus beds; getting broken glass repaired where necessary; repairing all verges; clearing Ivy from Yew trees where it reaches the branches.

Nov. 17.—*Sowing*—Mustard and Cress regularly in boxes. *Potting*—Roses, Solomon's Seal, and White Pinks; putting Seakale in bin in Mushroom shed to blanch; plunging some Lilies and Hyacinths in bottom-heat. *Miscellaneous*—Putting first Roman Hyacinths in full flower for stands into cold pits; beginning to nail east and west wall trees; placing protectors over Lettuces, Endive, Violets, Stocks, young Cauliflowers, &c.; covering up a little Seakale so as to be able to get at it in frosty weather, also Jerusalem Artichokes, so as to enable them to be got up during frost; washing Gardenias; giving Cucumbers a top-dressing of turfy loam and sand; soiling over the Asparagus beds; spawning and soiling new Mushroom bed; ridging-up vacant ground; pruning and tying Raspberry canes.

Nov. 18.—*Potting*—Lilacs, Guelder Roses, Laburnums, Ribes, and Azaleas—plants that have been prepared for forcing; putting Schizanthus and Humeas in 8-in. pots; potting plants of Spiræa ulmaria for forcing; putting Mimuluses into flowering pots, also Mint and Tarragon and Balm for forcing. *Planting*—Some Horseradish. *Miscellaneous*—Nailing Plum trees; strawing up everything in cold frames, and also the Endive under walls, in order to guard them from frost; cleaning marble with Paris white and potash before covering it up; sending in Gansel's Bergamotte and Napoleon Pears; filling ice-house; wheeling leaf-soil on to herbaceous borders; top-dressing first Muscat Vines with bone-dust and cow manure, finishing up with loam, sand, and horse-droppings. *Plants in Flower*—Standard Chrysanthemums in full flower and dwarfs just coming into blossom, Primulas, Cinerarias, Monochætum ensifolium, Heliotrope Florence Nightingale, Begonia parvifolia and B. incarnata, Cytisus, Erica hyemalis, Gesneras, Mignonette, scented, scarlet, and Lady Plymouth Pelargoniums, Fuchsias, Coleus, Gardenias, Narcissi, Schizostylis, Amaranthus, Scutellarias, and Stocks.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Wintering Stove Plants.—The hints recently given in reference to the winter treatment of greenhouse plants, particularly as regards the supply of water, will not be complete without a few words of a corresponding nature regarding stove plants. Amateurs' plant stoves are generally of a mixed character, where in summer, flowering-plants, now being induced to rest for a time, have to be accommodated along with others in active growth, and in not a few cases the warmest corner is devoted to winter Cucumbers, all of which can be done by somewhat compromising the treatment of each. The prevalent idea with many who grow stove plants is, that to give them the necessary rest in winter they must be subjected to a temperature sufficiently low to stop growth, even when the soil in which the roots are placed is kept somewhat moist; but, where this course is pursued it reduces the value of the stove in winter nearly one-half through keeping the heat so low that plants required to be kept moving can make little or no progress. To avoid this I should recommend amateurs to proceed as follows:—Most stove plants that are of a deciduous, or partly deciduous character, will bear the soil being kept so dry as to induce a state of rest even when kept in a temperature sufficiently high to excite growth, if there were enough moisture in the soil to admit of their making such. By gradually withholding water from the roots of Allamandas, Clerodendrons, Bougainvilleas, and plants of a similarly vigorous yet partially deciduous nature, they may be subjected to the requisite course of rest in a temperature high enough to keep plants that need more heat growing. The supply of water must not, however, be cut off all at once; first, withhold it until the leaves flag freely for a day or two, then give a little, but only a little, and when the plants flag a second time let them go a little longer before water is given; after a few repetitions of this kind the leaves will turn yellow and fall off,

and the plants will subside into a state of complete rest through the perfectly dry condition of the soil. In the same way Gloxinias, Achimenes, Caladiums, and the tuberous-rooted Gesneras, can be kept dormant during the required period, at the same time keeping up a heat of 65° in the night with 5° higher in the day, which temperature will be sufficient to preserve many plants in a growing state that with a lower temperature would make no progress at all. In cases where plants at rest, and others making growth, are kept through the winter in the same house, it will be advisable to put those that are dormant at the coolest end, leaving the warmest end for the plants required to be kept growing; at the same time the atmosphere should be more humid than if there were less heat, but this should not be overdone so as to cause a great amount of drip from the condensed moisture on the sash-bars and roof glass, as this, by falling on the soil of the plants at rest, would cause a greater disposition to grow than would be desirable. Bulbs introduced for forcing must be kept at the coolest end, and should be placed on a shelf over the paths with their heads within a few inches of the roof glass; by this means they will not be drawn up weakly, in which condition they are unsightly and all but worthless. It is necessary to be particular in thus treating Hyacinths, Narcissi, and Crocuses, for if kept in a temperature such as is here recommended, and placed at a considerable distance from the glass, the leaves and flower-stems are certain to be spindly and weak, as with these there must be no attempt to restrict growth by withholding water from the soil. By adopting the above course, such subjects as Gardenias, Ixoras, Cochliostemas, Dipladenias, Eucharis, Gesnera zebrina, Ipomœa Horsfalliæ, Euphorbia jacquiniæflora, and many others that will not flower well in winter with a lower temperature than 65°, or that will make but indifferent progress in the summer if kept lower than this during the winter, can be managed satisfactorily with the plants at rest. Plants like the hard-wooded, evergreen portion of the above must never be allowed to get too dry at the roots, or they will suffer serious injury, being wholly unable to bear the treatment recommended for those subjects that cast all or the greater portion of their leaves in winter. The sweet-scented Stephanotis floribunda, in the matter of watering, needs an intermediate treatment from that bestowed upon the above divisions of plants, for to continue it at rest in a house where a temperature such as above indicated is maintained, it must have the coolest place with no more water than will be just sufficient to keep the leaves from shrivelling, as if the drying process be carried too far, the foliage will suffer, thereby entailing serious injury on the plant. All the air given should be admitted at the coolest end of the house; this will still further assist the object in view.

Cucumbers.—Where these are grown during the winter in a plant stove they must be at the warmest end. The best way is to procure for each plant a box about 2½ ft. wide, and of similar length, and 15 in. deep; bore half-a-dozen holes 1 in. in diameter in the bottom, drain with 3 in. of crocks or coal cinders, on these put 1 in. of dry rough manure, and then half fill with the soil, setting the boxes on the side stage over the pipes, and train the heads of the plants on a trellis over the path, with the leaves about 6 in. from the glass; in this way the roots, from their near proximity to the pipes, will obtain enough bottom-heat to keep them some degrees higher than the average temperature of the house, and the heads of the plants, from the position they are thus placed in, will derive benefit from the heat that will arise from the pipes direct to them. Plants raised from seed or cuttings some weeks ago, if put in such a situation at once, and all their flowers nipped off as soon as they make their appearance until the end of the year to give them strength, will be in a condition to bear early. Water must be given them with care, as they do not at this dull season make roots in half the quantity they will either earlier or later on. To keep them clear from thrips, spider, or aphides, they should be syringed slightly overhead once a day, sufficiently early to let the foliage get quite dry before evening; they must be syringed gently with a very fine rose, for the leaves produced in the winter are very thin and tender, and certain to be injured if the water be directed against them with the force which they would bear in summer. Use the water, both for syringing and application to the roots, at a temperature of 90° for Cucumbers and all other plants in the stove that are required to be kept growing through the winter.

Greenhouse Plants.—If, as recommended early in the spring, a little Cineraria seed were sown to flower during the first months of the year, the plants, if they have been regularly attended, will now be beginning to push up their flower stems. Even should the pots appear small for the size of the plants, do not be tempted to give them larger ones, as no additional pot-room now will improve them in the least, for when they have already begun to push up their bloom-stems the slightest interference with their roots will seriously detract from their proper development. The strength of the flowers will be increased by giving them regularly weak manure water. Do not attempt to force them into bloom, as such a process will only end in disappointment by inducing a weak, puny condition; a temperature of 45° in the night will be found sufficiently high.

Flower Garden and Lawn.—Bedding plants have this season, through absence of frost, held out longer than usual, and there is always a disposition whilst they are fresh, to allow them to remain as long as possible without interfering with the introduction of the winter occupants; but where all or any portion of the beds is to be occupied by bulbs it is quite time these were in. After the summer plants are moved the ground should be forked over to a considerable depth; this is the more necessary where the soil is at all of a retentive nature, as by loosening it well the rains during the winter will more readily percolate, thus keeping the bulbs drier. It will be a still greater improvement in heavy soil to fork in a large portion of sand, as well as putting a handful under and on the top of each Hyacinth; Crocuses and Tulips being of a hardier nature are not so liable to injury from a wet winter. Where the soil is of the above description it will be better to raise the beds in the middle, so as to throw off the water more readily. When planted, cover the surface of the bed with 3 in. of fine coal ashes. Beds that are to be filled with Daisies, Primroses, Polyanthus, Violas, Arabis, or other perennial spring-flowering subjects, should be planted without delay, as these will endure the winter, and flower better in spring, from getting well-established before severe frost comes. In moving such plants from their summer quarters in the reserve ground, they should be taken up with as little mutilation of their roots as possible and immediately planted without the roots being allowed to dry; press the soil firmly to them, by which the frost will have less effect upon them. Where all or a portion of the beds are occupied by shrubs in the winter, these also should now be put in. Choose a dry day to mow the Grass for the last time; it is well at this season to set the mowing machine a little higher; old lawns, the Grass of which is not usually very strong, it is not advisable to cut too close before winter.

Greenhouses.

Where a miscellaneous collection of both hard and soft-wooded plants has to be grown together, it is a somewhat difficult matter to treat them so as to meet the requirements of both; and more especially is this the case if a portion be in bloom, as then it will be necessary to keep the house somewhat warmer and drier than is desirable for such as are of a hard-wooded character. In order to give these the best position possible they should be arranged in the lightest and coolest part, and placed as far away as possible from dry currents of air, such as are given off by hot-water pipes. No plants suffer so quickly or more severely from heat of this kind than Heaths and Epacrises, the fine hair-like roots of which shrivel up and die from the rapid drying process to which they are subjected; and should they escape this, the injurious effects are seen in the enfeebled health of the plants and the half-starved flowers which they produce. To prevent them losing their lower leaves, keep them frequently turned, so as to present a fresh side to the light, and see that no plants are allowed to stand near, in such a way as to interfere with a free passage of air. Kalosanthes, and other plants of that class, having soft, fleshy stems and leaves, should at once be placed on light, airy shelves close to the glass, and should only receive an occasional watering to keep the ball in a healthy condition. It generally occurs that these, after being cut down, emit such a number of young shoots, that were the whole allowed to remain they would be much too thick and crowded, and where this is likely to be the case they should at once be thinned out so as to leave those that are strongest and best situated at regular distances apart, in order that the flower-heads when produced may be equally distributed over the plant. Echeverias, so valuable in the summer for centres of beds and other outdoor uses, are doubly so during the autumn and winter for greenhouse or conservatory work, as just now the stately-looking E. metallica and the beautiful free-blooming E. retusa are pushing up a profusion of flower-stems that will render them highly ornamental for several months to come. To keep them in anything like good condition they must have light, dry positions assigned them, or the thick, fleshy leaves of E. metallica are sure to damp off, and it frequently occurs that the stems are affected in the same way. To prevent them from suffering such a disfigurement they should be kept tolerably dry at the roots, as their succulent nature renders them almost independent of water during the short, dull days of winter. Begonias, such as Boliviensis, Sedeni, Froebeli, and other half-hardy tuberous-rooted varieties, should now be gradually dried off by withholding water, and as soon as the tops have died away they should be stored in some safe position where they will not be subjected to drip, which would cause them to rot. Those who are not so fortunate as to have a good stock of these Begonias will find the

present a good time to obtain them, as the tubers can be packed in a small compass, and cost but little for carriage. If buried in dry sand they will keep sound and good till required for starting into growth, which should be done in gentle heat in March—*i. e.*, if they are wanted in bloom early. Seed sown at the same time will make pretty little flowering plants by the autumn, and go on improving as the tubers gain size and strength. The stems of Lilies being now ripe, and the roots in a less active state than at any other period, no time should be lost in getting the whole stock re-potted, as it can be done better, and with more safety to the plants, while they are resting than after growth has commenced, and when it is almost impossible to handle them without breaking the large fleshy roots which are always exceedingly brittle. In preparing the soil see that it is entirely free from worms, which not only block up the drainage, but get among the scales of the bulbs and induce rot. Cultivators of Lilies are very much divided in opinion as to which is the most suitable kind of soil in which to grow them, some preferring good fibry yellow loam, while others are in favour of a mixture of both, and in the latter I have found them succeed best. As the roots like a loose, open material in which to ramble, the soil should be used in a rough state, a condition in which it retains its porosity and allows the water to pass freely through it, a matter of considerable importance in the cultivation of plants that require such abundant supplies as Lilies do when growing freely. If the loam be of an adhesive nature, about one-third of peat should be added in coarse lumps, and thoroughly incorporated by turning the whole over together and adding a sprinkling of sharp silver sand at the same time. If manure be used at all, it should be of the mildest description, well dried and thoroughly decomposed; but as it is an easy matter to give them what stimulants they require by watering with liquid manure, it is better avoided in a solid state, on account of the injury it is liable to inflict on the bulbs should it come in immediate contact with them. Another objection to mixing manure with soil used for potting purposes is, that plants get it when it is least required instead of at the time they are making active growth or carrying large heads of bloom. In re-potting Lilies the bulbs should be disturbed as little as possible, that is, they should not be separated unless they have become too thick and numerous for the sized pots to which it is desired to limit them, and in that case it is best to divide the mass in halves or quarters, using as much care as possible not to break the roots that may have become interlaced, and by which they are held together. When the bulbs are thoroughly ripe, as they ought to be by this time, the old flower stems part readily from them, and should be removed with the whole of the soil from the upper part, and as much of the lower as can be shaken away or picked out from amongst the roots without running the risk of breaking or injuring them in any way. In preparing the pots see that they are well drained, and over the crocks scatter a good handful of fresh, dry soot, which will act as a barrier to the ingress of worms from below, and have a most beneficial effect on the health of the plants and impart a rich deep colour to the foliage. Before covering the crowns of the bulbs with soil shake a handful of clean sharp sand over them; the sand will run among the scales and prevent any lodgment of water that might otherwise take place, causing them to rot. The pots should be filled to within 2 in. or 3 in. of the top, thus leaving room for a dressing of rough, rich soil, after the stems get a foot or so high, when they begin to emit roots at their base, which rapidly seize hold of any fresh material that may be added at that time. If the soil at potting time be in a moist, healthy state, as it should be, no water will be required till top growth has commenced, *i.e.*, if the plants be placed in suitable positions away from dry currents of air. A close, deep pit, or under the greenhouse stage, provided they can be kept free from the drip of plants above them, will form a convenient place to stand them; but the former is the best, as there the conditions are more favourable from the atmosphere being damp and cool, and not likely to excite them into growth before they have made plenty of root.—J. Sheppard, *Woolverstone Park.*

Orchids.

Spot is now-a-days a very prevalent disease amongst Orchids, so prevalent, indeed, that but few collections are wholly unaffected, and as it may be prevented if proper precautions be taken, and as even when plants are attacked by it they are by no means beyond cure, a few remarks on the subject may not now be out of place, inasmuch as the evil is generally contracted during the dull months of the year. This disease is made manifest by the decay of certain portions of the tissues of the plants, while the remaining parts frequently appear to be as healthy as ever. Each succeeding new growth is generally healthy looking at the outset, but on arriving at a certain stage the disease shows itself in much the same manner as variegation does in the case of many variegated plants. Various causes have been assigned for this disease, some going so far as to say that it is the result of circumstances over which we have no control, that it is incurable, and that it may be communicated by one plant to another. With none of these statements can I agree. That when once it shows itself it is difficult to restore the plant attacked to health is certain, and so long as it is subjected to the same treatment as that under which it contracted the disease, it is impossible to do so; each new growth, apparently healthy at first, will be sure to indicate disease before it attains maturity; but if the plant be taken vigorously in hand, and treated in a proper and reasonable manner, it will outgrow it in time. My experience proves that the disease may be caused by excessive heat, by watering over the foliage, or by giving too much water at the roots, by a non-observance of the resting season, or by an insufficiency of air and light—any or all of these will induce the disease. That it is most prevalent in autumn and winter is evident from the fact, that Phalænopsis, some Arides, Saccolabiums, Angræcums, and other late-growing plants, are most subject to it; but, even in the case of varieties that grow in summer, I am convinced that the germs of disease are mostly sown during the winter season, although the plants do not generally show it until the new growth is somewhat advanced. For the next three months, therefore, great care must be taken in watering the plants, and only sufficient water should be poured over the stages, &c. to prevent the air from being too dry, and thereby exhausting the substance of the plants. With respect to resting plants the amateur cannot do better than proceed as directed at p. 301. Growing plants should now be but sparingly watered, and sprinkling the foliage, which should be done with extreme caution at any time, should be wholly discontinued until spring returns. In the case of plants already attacked by disease it is best to shake all the old material from them, prune away all decayed portions of the roots, and re-pot or re-basket them in small pots or baskets in some fresh Sphagnum Moss, placing them as near the glass as possible, and keeping them dry until they begin to grow. Even although they may seem to suffer a little, the dry treatment in a proper temperature should be persisted in, for I have observed that when diseased plants are freely watered they often make growth which soon becomes diseased, but they rarely make root; on the other hand, when kept quite dry, they push root first and foliage afterwards, and thus by the joint action of roots and leaves they are often restored to health. It must, however, be borne in mind that any efforts put forth for restoration to health will be fruitless, unless the means of perfect ventilation be secured and properly attended to. Deciduous Orchids, or those which lose their foliage annually, are much less liable to spot than evergreen kinds, a circumstance easily accounted for. The deciduous plant, by the withering of its foliage, indicates that its resting season has arrived, and therefore, by asking for it as it were, it generally gets a season of rest, which, even if not enough for the successful development of its flowers, is sufficient to save it from disease; but in the case of evergreen Orchids the cultivator has no such intimation, and the foliage being fresh and green, the plant is frequently copiously watered long after it has ceased to require any but the smallest quantity, and disease is the result. The resting season should be scrupulously observed, in order to ward off the attacks of this troublesome disease, which not only disfigures the plants, but prevents them from flowering, and if not checked, kills them.—James O'Brien.

Hardy Fruits.

Now is the time for the thorough renovation of old fruit trees, for the produce of these, like that of everything else connected with gardening, unless the trees are well attended to in the matter of food, will be small or of indifferent quality—perhaps both. It is a good plan to attend to the wants of a few trees each season, and so in a methodical manner go over the entire garden; I have followed this system for years and with the greatest possible advantage. This season I shall operate on the Morello Cherries as follows:—First, all the inert top soil will be taken away till we reach the roots, and then with small hand forks the soil will be forked up amongst them, and some of this will also be taken away; afterwards all suckers, warted, dead, and decaying roots will be cut off; then we will fill in with the following compost, viz., two-thirds of the best loam procurable, and one-third road-scrapings, lime-scrape, wood ashes, and a slight sprinkling of ½-in bones; the whole will be compressed as tightly as hands and feet can make it, and the borders will be afterwards mulched with stable litter. Of course, the compost and mode of operations must be varied according to the wants of the trees to be treated. Young or two vigorous-growing trees should be entirely lifted, and, after pruning the roots, be replanted in the same compost as before, and this will induce fruitfulness in a year or two

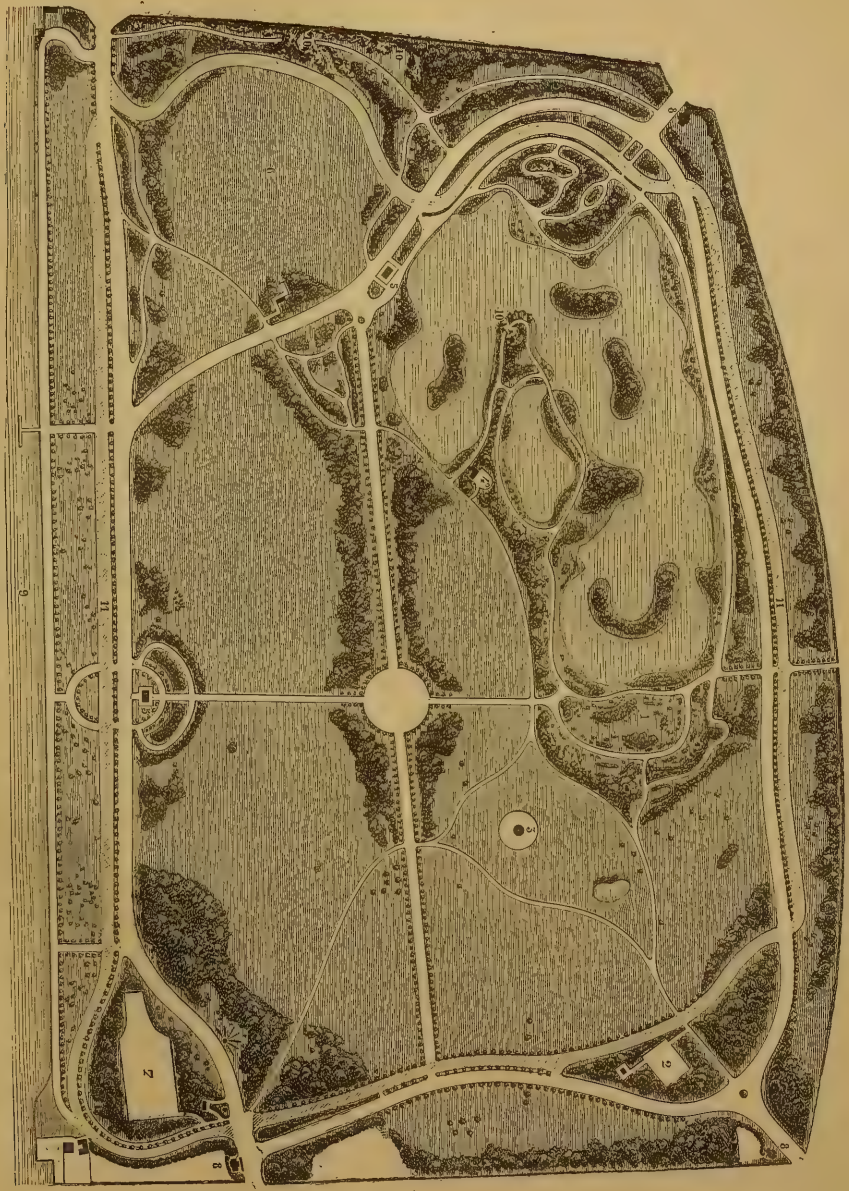
hence; if need be, they may be given a little richer feeding material, but it is quite a mistake to give any kind of fruit trees manure in any form until fruitfulness takes place. Planting may be proceeded with up to the end of the month, if the weather permit, but after that all remaining undone should be deferred till February. Unnail or untie, as the case may be, Peaches and Nectarines from walls or trellis; the benefit accruing through this simple operation, though doubted by some, I consider of immense value for the following reasons—first, the trees are in a much more equable temperature away from the walls, and consequently their rest is more effectual, whilst at the same time the operation retards the growth of the trees, and the later they can be made to blossom the greater the probabilities of a kindly set of fruit. I therefore recommend that it should be done as early after this date as possible; of course the main branches must be secured to the walls to prevent injury through wind-waving. The foliage being off Gooseberries and Currants, they may now be pruned at any time, and the ground, if necessary, be manured and dug; forks only should be used for digging amongst fruit bushes, and care should be taken not to unnecessarily mutilate the roots, even with forks; spades for such work should never be thought of. In frosty weather wheel manure on to the fruit quarters where wanted, also burn up the prunings and other refuse matter, the ashes from which make the best possible manure for all kinds of fruit trees, but particularly stone fruits. Keep the fruit-room well ventilated in dry and bright weather, but closely shut up during the prevalence of rain or fog. All the earlier varieties of both Apples and Pears are keeping very indifferently this season, and this is one reason for greater watchfulness in the removal of the decaying fruit, one of which will soon be found to taint several others.—W. Wildsmith, *Heckfield.*

VEGETABLE MARROW PRESERVE.

Owing to the high price of provisions there is an unusually large demand for fruit preserves, but the production of these, unfortunately, rests upon an insecure basis, as the experience of the present year has fully shown, fruit being remarkably deficient in quantity. Preserves, however, can be made of other material besides fruit. Indeed, as I have shown on previous occasions, it is possible to manufacture a cheap, pleasant, and wholesome one from Vegetable Marrows. When in a provision shop, a few evenings ago, I observed that several poor persons bought in small quantities a kind of mixed preserve of a questionable character, and although flavoured with essence of Raspberry it looked as if compounded of Beetroot and molasses; this was purchased freely at 6d. per lb. Acting upon this hint, I determined to do my best to arrive at some near estimate of the cost of manufacturing fairly good Vegetable Marrow preserve. The constituents were as follows:—A good-sized Marrow, costing 3d., when peeled and freed from the seed-vessels, gave 5 lb. of usable material; to this were added 3 lb. of loaf sugar, at a cost of 1s., and a Lemon and spoonful of ground ginger, at a cost of 3d., making a total cost of 1s. 6d. This mixture, boiled nearly two hours, gave us a most pleasant and wholesome preserve, just 5½ lb., at a cost of about 3¼d. per lb. Of course this does not include labour or firing, but that in the present case was too small to be included. What I want to show, however, is this—that if I can manufacture an article such as my family and friends pronounce to be excellent for 3¼d. per lb., I believe that it would be possible for manufacturers in a large way, who would purchase both Marrows and sugar by the cwt. and at a cheap rate, to produce a first-rate saleable article at a less sum, and that such preserve could be retailed all over the kingdom, but especially in our large towns, at a price not exceeding 3d., and still give a fair profit to all concerned in its sale. Marrow preserve also has the merit of looking wholesome, and that is much in its favour. Mixed, or indeed any dark-coloured jam, is so easily adulterated that it is difficult to say of what it is composed, but Marrows are so easily and so cheaply grown that it would not pay to mix any other product with it. Some assert that already Marrows enter largely into the composition of marmalade, and that the flavouring with Orange serves to disguise the material. If this be so, it is rather hard to be compelled to pay for it a price so much in excess of its real value. In thousands of homes, however, where ordinary fruit is not obtainable, Vegetable Marrows at least may be had; and, equally in thousands of spots, where fruit cannot be grown, Marrows may be cultivated and good-sized ones produced. For preserve, the Marrows are best when half matured, that is, both older and larger than when usually cut for the table. Ordinary Marrows, when cut so young, are almost wasted, as they are then little else but fibre and water, but when well developed, but with the skin yet soft, the flesh is firm, and when cooked leaves behind a much more solid residue. Used in this way, the cultivation of the Marrow would prove more profitable, inasmuch as each plant would then produce at least twice the usual bulk. Whether some sorts of Marrows may be better for jam than others, is a point which I am unable to decide. I have found Sisley's New Green Cucumber Marrow very suitable for the purpose, because the fruit attains a great size before the skin gets firm or the flesh stringy. It is a clear white-fleshed variety. It is probable that the Boston Squash, or, as it has been termed in the South of England, where it was formerly much grown, the Vegetable Cream, would be well suited, as its flesh is very firm, and when cooked has a soft, Marrow-like texture; but it is of a rich yellow tint, and to some would, on that account, be objectionable. I, however, esteem it highly for the table, and believe that it would produce a good preserve. I have it on good authority that a pleasant preserve can be made from Carrots; but it is possible that the strong and peculiar flavour of that root would not be acceptable to all palates. Rhubarb, however, produces a delicious preserve, and one that will keep well if made from the firm, matured autumn growth. Spring Rhubarb seldom gives a satisfactory result. In the case of all cheap preserves, flavouring can be adjusted to suit the general taste with fair exactness, as all forms of essences are available, but it is unwise to overload any with an excess of foreign substances. A. D.

THE DESIGN OF BATTERSEA PARK.

For a long time Battersea Park has taken a leading position among London public gardens, and mainly owing to the skill and energy of the late Mr. John Gibson, who possessed the spirit of progress and improvement in an unusual degree. In this notice we shall merely allude to the general design of the Park. Thousands have visited it who will only remember it for its famous sub-tropical garden, which has certainly many good points, but also some serious defects which cannot be too clearly pointed out. The general plan of the sub-tropical is excellent, inasmuch as the pleasant open lawn allows of the numerous and fine effects round the plants being seen from many different points of view and at various distances. The spirit of innovation, too, which gave us those many striking plants instead of the beggarly monotony of "bedding stuff" is deserving of all praise. Probably no garden has had more visitors, and therefore it behoves us to point out certain defects which it is very desirable should not be repeated in other gardens. Firstly, the slopes in various parts are needlessly abrupt, and their gradation far from natural or easy. The kind of terraced banks seen in one part are also most objectionable. Secondly, there is too great a wealth of beds and masses jumbled together without any controlling idea. For example, near the serpentine bed the result of this is quite destructive of all good effect; the forms of the beds, too, in consequence of their being raised high out of the ground, are also far too evident and offensive to the eye. Thirdly, the bays or indentations, when they occur, are far too much after the same pattern. Few things in landscape gardening require more taste and observation than the play of variety along the fringe of a choice and picturesque shrubbery; it is better not to attempt this at all than have nearly the same pattern for every recess. Slight observation of the way shrubs and low trees group themselves naturally teaches us all we require here. It is not more agreeable to us than to others to point out faults of this kind, but if there be any healthy life at all in a journal, its chief function is surely to do all in its power to distinguish true improvement from any errors or drawbacks that may accompany it. The water is very well arranged in Battersea Park so far as outline is concerned. There are many spots from which exceedingly good effects are seen. There is also a considerable variety of good trees and shrubs planted in the Park. This collection, it is to be hoped, will be kept up and added to year by year. There is nothing more disheartening to those who care about the permanent beauty of a garden than to witness the usual expensive and laborious trouble with the bedding plants, while no attention is being paid to the planting of the enduring ornaments of a garden or park. The rock garden in Battersea Park is well formed and effective from various points of view. The open Grassy spaces are precious for various reasons, and the bold drive around is also as it should be. The central avenue, circular space, &c., indeed, are the only blemishes in a good general design. That avenue and its plantation are only effective in narrowing and demeaning the main part of the Park. Without it, and with



BATTERSEA PARK.

1. Sub-tropical Garden. 2. Gymnasium. 3. Orchestra. 4. Engine house. 5. Refreshment rooms. 6. Cricket ground. 7. Frame ground. 8. Entrances. 9. River Thames. 10. Rockwork. 11. Ride.

the open space only crossed with the necessary foot-paths, the effect of the central parts of Battersea would have been as good as that in any public park we have. The present superintendent has carried out in various places a very good improvement in softening the margins of the shrubberies by planting outside of them in a tasteful manner. By allowing each shrub sufficient room for full development, and leaving also small Grassy glades between, a pleasing and natural effect is the result. Much, however, yet remains to be done in the same direction, many of the shrubberies showing much bare earth and very formal margins—both very undesirable things in public gardens.

GARDEN RECEIPTS.

Weeds on Lawns.

It is often difficult to eradicate Plantains, Daisies, and other broad-leaved plants from lawns when once they have commenced to grow. Careful hand-picking in the case of small Grass plots is the safest remedy, but where the lawn is extensive, other means must be resorted to. If the lawn be large, set to work some women or boys, with a man to superintend. Let them cut off the Daisies by the root with an old knife. When this is done, cover the surface with from ½ in. to ½ in. deep of soil and well-rotted manure mixed together in equal quantities. Spread this compost equally on the surface, after having gone over the lawn with an iron rake, drawing the latter backwards and forwards. As soon afterwards as there is a prospect of rain, sow in mixture for 1 acre Festuca duriuscula, 4 lb.; Festuca tenuifolia, 1½ lb.; Poa nemoralis, 1½ lb. (if shaded by trees, 1 lb. more); Cynosurus cristatus, 4 lb.; Trifolium repens, 3 lb.; and Trifolium minus, 2 lb.; and if the ground be liable to burn the Grass in summer, add 1 lb. of Lotus corniculatus. Sow on a dry day, rake over the ground lightly with a wooden rake, and roll well on the same day or before the seeds have germinated, taking care that the ground be dry. After sowing, let the lawn alone for a month, and then mow. Roll well throughout the summer, and go over the lawn with a spud, and grub up the Daisies by the root. By pursuing this treatment we have known a lawn in which Daisies and Plantains were very plentiful become a good turf.

—— Take a three-pronged kitchen fork and thrust it into the Daisy root about 1 in. deep; strengthen your right hand by laying hold of the fork close to the prongs, and gently prise the Daisy up. When loosened, lay hold of the plant with the left hand and draw it out, keeping the points of the prongs as a guard against drawing soil out as well. The Daisy is now fairly got rid of for good. The operation should be practised while the ground is damp.

Salt.—The following treatment adopted by Mr. M'Knight, of Lydiard Manor, Wilts, effectually cleared a lawn containing 1½ acre of turf which was eaten up with Plantains:—A pinch of Salt is put into the crown of each Plantain in the hot dry summer time and left there slowly to deliquesce. If the salt remains visible for three days, the Plantains are done for effectually; if a shower of rain come on and melt the Salt before that time, it must be repeated. Mr. M'Knight found, in tracing out one fine old root, that the Salt, slowly melting, had destroyed leaf after leaf, and that the poison had been most fatally conducted, by the construction of the plant, to the centre of the root, and that it had then been conducted down the root (by its brown external case) until it had destroyed the very last particle of root, and left nothing but the hollow case or outside of the root, which was 9 in. long, and lay horizontally under the Grass. It took an old woman the whole summer to do one-quarter of the lawn, and required a great quantity of Salt. In some places there was no Grass, and after the Plantains were killed for some time I looked on large bare patches of mould; but the Grass soon came.

Sulphuric Acid.—Mr. Nichol, of Drinkstone Park, Bury St. Edmunds, who has been successful in clearing lawns of weeds by Sulphuric Acid, states:—Sulphuric Acid will, if properly applied, doubtless kill Daisies on lawns quite as effectually as it does Plantains. It would, however, of course be a more tedious job, particularly if the Daisies were large and many-headed. The acid should be dropped right in the heart of each plant, and a single drop will be sufficient; if the acid be good, it will immediately burn up the crown or growing point.

Watson's Lawn Sand.—This preparation, if used in the quantity prescribed, will kill Daisies and Plantains, and all other thick-leaved plants, and do no injury to the Grass. For small lawns it is specially fitted, but for large places the expense incurred in its use would be considerable. A pinch of agricultural salt put in the holes from which Daisies or Plantains have been cut out will kill the roots, and the Grass will soon cover the spaces again. Of course this can only be applicable to small lawns where Daisies and Plantains are not very numerous. This sand is a chemical preparation, which is said to possess the remarkable property of destroying Dandelions, Daisies, Clover, Plantains, and other Weeds, without injuring the Grass. We have had no experience of it ourselves, but the preparation is well recommended by testimonials. It may be used at any season of the year; but the most favourable time is from March till the end of September. Grass growing freely during that period, the vacant places caused by the decay of the Weeds are rapidly filled up, while the warmth of summer, especially if accompanied by moisture, greatly increases the Weed-destroying power of the Sand. Lawn Sand may be applied in various ways; the larger Weeds may be destroyed by placing about half a teaspoonful in the centre of each, when, if the weather be favourable, they will wither in a few hours, and in two or three days disappear. The Weeds may thus be speedily removed, but the Grass springing up more vigorously where the Sand has been placed, causes the lawn to assume an uneven appearance. The most satisfactory way of applying it, and the one recommended, is, to throw it broadcast on the Grass in small quantities at a time (not exceeding 1½ oz. or 2 oz. to the square yard); distributing it as evenly as possible, and repeating the operation every few days until the Weeds are entirely removed. It is quite possible, in this way, with a little perseverance, to remove almost every vestige of vegetation except the Grass itself, the general appearance of the lawn undergoing, at the same time, a gradual, but decided improvement. A careful application of Lawn Sand according to these instructions will be found a perfect remedy for Weeds on lawns; and if applied two or three times a year, will certainly prevent their recurrence.

Weeds on Walks.

Where garden walks have been properly made, and the Weeds never allowed to seed, hand-weeding after a shower of rain, and rolling directly the surface will bear the roller, are in many places practised with success. But in gardens where gravel walks are extensive, and, as sometimes happens, the gravel is of a coarse, shingly character, which, if disturbed or broken up, involves some difficulty in getting a firm, smooth surface again, a destructive agent of some kind becomes desirable. Almost everything that destroys the Weeds takes some of the bright red colour out of the gravel; but apart from such drawbacks, walks may be kept clean cheaply by the use either of salt or sulphuric or muriatic acids.

Arsenite of Soda.—Dissolve 1 lb. of powdered arsenic in 3 gallons of cold water, boil, and keep stirring; then add 7 gallons of cold water and 2 lb. of crushed soda; stir the whole well whilst boiling, and with a rosed watering-pot apply to the walks in dry weather, from March to May inclusive being the best time. The above quantity will be enough for 25 square yards. An inclining board should be placed at the sides of the walks or Grass to keep off the hot liquid.

Carbolic Acid.—A solution of carbolic acid, 1 oz. to a gallon of water, sprinkled over the path from a common watering-can, will effectually destroy the Weeds, and also kill ants and other small insects that may harbour there. If the walks have Box or Grass edgings, great care must be taken in applying the solution, lest the edgings suffer from its contact, as it is particularly destructive to any sort of vegetation.

Coal-tar.—Break up the path, rake off the largest Weeds, and then gather up some of the surface gravel and mix with coal-tar to the consistency of mortar; spread this over your pathway an inch or two thick, cover this again with a sprinkling of clean gravel, then roll, and add another thin coating of

gravel to finish off. No Weeds will grow in this, nor will there be any unpleasant smell or injury done to Grass edgings if the tar mixture be put a little thinner on the sides of the pathway.

Gas Liquor.—Ammoniacal liquor from the gas works will effectually destroy the Weeds. The liquor should stand at five or six Twaddell. It is said by some to be more effectual than salt.

Lime and Sulphur.—The following method of destroying Weeds on walks is pursued at the Mint in Paris, with good effect: 10 gallons water, 20 lb. quicklime, and 2 lb. flowers of sulphur are boiled in an iron vessel; after settling, the clear part is thrown off and used when needed. Care must be taken, for if it will destroy Weeds, it will just as certainly destroy edgings and border flowers if sprinkled on them. Weeds thus treated are said to disappear.

Muriatic Acid.—Mr. Temple, gardener at Packington Hall, Coventry, recommends diluted Muriatic Acid as a Weed killer. He states that it completely destroys all vegetable life (insect and animal as well) mixed at the rate of ½ pint to the gallon of water. One application of this will keep walks free from Weeds, Moss, or worm-casts for two years. As regards its application, it is only needful to wet the walk with it; in two seconds the Weeds and all insects will be killed, and in a few hours after they can be swept off; or if left, it does not matter much, for in a day or so they become shrivelled up, leaving the walks greatly improved in appearance, owing to the gloss it leaves on them. On broad walks, it should be put on with a large watering-pot and ordinary-sized rose. It is not necessary on hill walks to put it on so heavily that it will run; for, of course, wherever it touches Grass edgings or Box it at once kills them. Even in the case of narrow walks, however; if carefully used and run through a smaller rose no harm need be apprehended. As respects conditions, dry weather is better than wet for applying it, as it soaks in before it can be washed to the sides. Other authorities recommend a quart of acid to a gallon of water.

Oil of Vitriol.—Choose a clear evening after a hot day, put water into a wooden pail and add Oil of Vitriol thereto in the proportion of 1 to 30 parts of water. Take a well-painted watering-pot, and, beginning at the end of the path, step backwards, watering as you go, taking care to keep clear of the edgings, if Box, &c., and to avoid splashing the mixture over clothes and boots. When done, fill the pail with fresh water and leave the watering-pot in all night to soak out the acid. In the morning the path will not injure boots after the dew is off, and the Weeds will be either all dead or dying. Should one's clothes, &c., get a spot or two, a teaspoonful of smelling salts in water will restore the colour. Let the path remain for a day or two and then brush off the dead Weeds. One application is generally sufficient for a long time.

Mr. Hobday, writing to the "Field," states that he has found the use of acid more expensive than salt, and certainly not more efficient. It is also very destructive to water-pots, men's clothes, and in fact anything that comes in contact with it, therefore it requires to be used with great care. Whatever plan is adopted in destroying Weeds, the effect in any case will not last beyond one season. Both salt and sulphuric acid in moderate quantities, or when largely diluted, are powerful manures, and one good dressing in a year is sufficient when applied in dry weather. The remedy is much more expensive than hand-picking. What would cost £12 for hand weeding would amount to about £100 where the acid is used, to do the thing at all satisfactory.

Salt.—Where a large extent of gravel walks and roads has to be kept free from Weeds, a good sprinkling of Salt sown over the surface in dry weather is the cheapest mode of doing it; but then its appearance is in some places objectionable. It remains like a miniature snowstorm glistening in the sunshine for some days, till all is dissolved and absorbed. Another way of applying it is in the shape of hot brine (about 1 lb. of Salt to a gallon of water), boiled in a cauldron on wheels and drawn off through a tap at the end into watering-pots, and sprinkled over the surface just sufficient to damp the whole face of the walk; but this plan is on the whole more expensive than simply sprinkling the dry salt on the surface. True, it does not take so much Salt, but there is a considerable expense for fuel, and the labour in applying it is very much greater. But there is this advantage about it—it gets rid to a certain extent (not altogether) of the objectionable white appearance. Walks impregnated with Salt, if not well drained and well made, are nearly always damp in winter. Weeds generally may be completely extinguished by attending to the following directions:—1. Study their habits: without this you are working in the dark: you are shooting without taking aim, and are more likely to miss than to hit. 2. Have faith that Weeds can be killed. 3. Should you for the first year or two see little benefit from your labour, do not relax your efforts; you will certainly triumph in the end. This is the experience of all gardeners, and a firm conviction of this truth is one of the strongest incentives to perseverance. 4. Be beforehand with your work; this is exceedingly important. It is so not merely because Weed-plants can be killed easily just as they commence to grow, but it often happens that many Weeds actually go to seed before they get large enough to attract attention. If the gravel be of a kind that binds easily in a partially dry state, keep down Weeds by weeding when the walks are wet after rain, using the roller immediately after, but do not overload the walks with gravel. If the gravel be coarse, and not easily smoothed down when distributed, I should then recommend Salt, either sprinkled upon the surface in the shape of hot brine, if appearances be studied more than expense. There is also another important consideration in connection with the use of salt or acids, and that is the difficulty in some cases of preserving the edgings from all contact with it. Where the edgings are turf I have never found any difficulty, but where Box edgings are used, the greatest care is necessary. If used near Box edgings, and showers follow soon after its use, in all probability unsightly patches of dead Box will not be uncommon.

Weevils.

These are principally leaf-eating insects, and are sometimes very troublesome, both in the grub state as well as when fully matured. They are, like many other unwanted company with which we have to contend, much more numerous in some localities than in others. The common brown Weevil attacks Vines just about the time the berries are set. They not only perforate the leaves in all directions, but also attack young berries, usually disfiguring the shoulders of a considerable number of the bunches. The mature insect is a night-feeder, and it may then be caught by placing a cloth under the plant it is feeding upon, and giving the plant a smart shaking, by which means they will fall off on to the cloth spread out to catch them, when they may be caught and destroyed. Something white, such as a large tablecloth or sheet, should be used, as, from its colour, it enables the Weevil to be seen the best.

Whitewash.

Slake half-a-bushel of unslaked lime with boiling water, keeping it covered during the process. Strain it, and add 1 peck of salt, dissolved in warm water, 3 lb. of ground Rice, put in boiling water and boil to a thin paste; ½ lb. powdered whiting, and 1 lb. of clear glue dissolved in warm water; mix these well together, and let the mixture stand for several days. Keep the wash thus prepared in a kettle or portable boiler, and when used put it on as hot as possible with either painters' or Whitewash brushes.

—— Mix 6 lb. of fine white pipe-clay in as much water as will make it as thick as paint; soak and dissolve ½ lb. of good glue; add and mix well; then add ½ lb. of fat or dripping of any kind, put on the fire and boil a few minutes, and use while hot. The fat being boiled with the pipe clay forms a kind of insoluble soap, which, if used while hot, defies all kinds of weather.

—— Limewash is prepared by placing some freshly burned quicklime in a pail, and pouring on it sufficient water to cover it. Boiled Linseed oil should then be immediately added in the proportion of 1 pint to 1 gallon of the wash. For warm work any refuse fat may be used.

Wireworms.

Every kind of vegetable planted on newly broken-up pasture or old turf-land is sure to suffer from Wireworm (the larva of the Elater lineatus or Click Beetle) if not perseveringly dressed for the first two years with tolerably liberal dredgings of salt, at the rate of 6 cwt. to 8 cwt. per acre, when the weather is cloudy and rainy, and constant surface-stirring of the soil with hand-scarifying or methodical hoeing on fine dry days, no matter how often performed, in order to well intermix and incorporate the soil. The treatment described, however, will very soon eradicate the Wireworm, and wonderfully improve the growth and health of all kinds of garden vegetation. At the same time, if any part of the ground be pretty well covered with growing vegetation, and it be not convenient to sow or cast on the salt in a regular way evenly over the surface, sow over and amongst the crops broken-up or small pieces and dust of Linseed oilcake. This the Wireworms will eat, and then swell up and burst; but salt is the best remedy for effecting a permanent clearance. It will very soon do so if methodically applied, and will also improve the soil for a luxuriant vegetation for the future. As soon as any crop is cleared, apply a dredging of salt and fresh air-slaked hot lime; give the surface a deep scarifying; fork and tumble it up into rough ridges, in width according to the crop intended to be planted, and plant or sow half-way up the ridges on one or both sides, or on every other ridge, according to the desired distance, thus affording a convenience not only of observing the ravages of any stray Wireworm or grub, but exposing a good deal of the earth's surface to atmospheric influence; pulverize it afterwards, and hoe and scarify it down in a healthy state so as to torment the enemy. Nevertheless, the best way is, in taking into use or breaking up old pastures either for garden or farm, first to dredge the surface with salt previous to putting plough, fork, or spade into it, and folding sheep on it for two or three nights, applying a dredging of salt at the rate of 4 cwt. or 5 cwt. to the acre each day, evenly over it.

In gardens they are equally destructive, especially where there has been new soil added from Grass land. The Wireworm is not at all fastidious as to any particular description of food, being equally at home feeding on the roots of a choice Ranunculus, Pink, or Carnation, or in the kitchen garden on the more homely fare of Potatoes or Beet. In some parts it exists in much greater numbers than in others. In the south of the kingdom it is more plentiful than in the north. There is nothing that suffers more from its attacks than the Ranunculus. The Ranunculus grower should pass through the hand the whole of the new soil he yearly adds to his beds, breaking every piece that is sufficiently large to conceal any of these unwelcome visitors; and, after the soil is consigned to the beds, it is necessary to resort to the further precaution of inserting slices of Potatoes or Lettuce stems thickly 1 in. below the surface of the soil, looking over them every day. The same should be done when renewing the earth of any other plants, whether in the flower or kitchen garden. Birds of all kinds are excessively fond of them, and it is quite amusing to see the eagerness displayed by birds in an aviary to devour them; the birds lose all sense of timidity in their haste to obtain these delicious morsels. Alcohol, spirits of tar, nitrate of soda, and salt have been strongly recommended as specifics against their attacks; but the advocates of these remedies forget the cost and the difficulty of approaching them. It is easy for a chemist to say, "alcohol will destroy the Wireworm, therefore buy the alcohol and employ it;" but it is difficult to conceive an object more pitiable than a farmer who sets himself to utilize the advice. How is he to begin? Frequent ploughing and harrowing exposes the Wireworms to birds, and rooks and starlings have been killed with hundreds of Wireworms in their crops; but avoid the supposed remedy of hard rolling, it only protects the Wireworms from the birds, and cannot crush them; they are as tough as pin wire.

Woodlice.

Woodlice (Oniscus asellus) are exceedingly troublesome when they exist in large quantities. Being almost omnivorous, nothing comes wrong for them. They seem to equally enjoy a juicy Peach or Melon, a fresh Mushroom, the roots of an Orchid, or the most putrid animal or vegetable matter, if in a sufficiently dry state. Where they exist in large numbers in the Orchid-house they do great damage by eating the young feeding points of the roots, especially of such plants as Cattleyas, that require to be kept dry when not in active growth, but which, nevertheless, make a quantity of roots during that season. If the Woodlice be numerous at this time they will destroy almost every root that is made on the surface of the pots, rendering the growth which follows small and weak. The Woodlouse is not an insect, although it looks like one, but it crosses the border and belongs to the class of Crustaceans, of which lobsters and crabs are the most honoured members. Its proper function is that of a scavenger, but as the human scavenger sometimes exceeds his duty in sweeping up things which are not yet past use or which may be of value, so the Oniscus does not content itself with feeding on the detritus and decaying vegetable matters, which it is its proper business to consume, but when it finds its way into a hot-house takes a fancy to costly living plants, and occasionally does them a good deal of harm. In the open border they also attack herbaceous plants. It is no uncommon thing to see some of those which spread themselves over the ground and so furnish a fine shelter to insects, grow sickly, and, on examination, it will then be found that there is a crowd of young Onisci beneath, which have been eating the collar or neck of the plant just above the ground until they have nearly removed the outer ring, and so destroyed the plant. When they get into an Orchid-house it is difficult to dislodge them, for they establish themselves among, and make galleries through, the Sphagnum in the baskets, or where the Orchids are growing. The gardener may be surprised at seeing his plants bitten and fading. He may turn over every bit of slate, tile, broken pot, wood, bark, or anything else that might serve as a hiding-place, and see nothing; but unless he watch during the night, and catch the culprits at work (for they are nocturnal animals), he will never find out that it is these Onisci that have done the mischief, and that their hiding-place is about the plant itself. There are several species—some grey, others nearly black, all paler beneath. Their life is longer than that of most insects, as they live, and seem to increase in size, for several years. They have the faculty of rolling themselves up like a Pea, in the same manner as the hedgehog, whence their French name "cloporte," as we should say "one who closes the port or door." No wholesale mode of destroying them is known. They must be cut off in detail, and the same sort of contrivances which are employed to entrap earwigs and surface larvæ must be used against them. In the Mushroom-house they are a very great nuisance, for here everything exists congenial to their taste—warmth, food, and material in which to lodge. If they exist in great numbers, boiling water poured down the sides of the beds up to the wall will destroy all with which it comes in contact. The little pots with the Potato baits can be used with advantage; but here, as with Melons, taking time by the forelock in destroying them, before they exist in numbers sufficient to do much harm, is the right way. They sometimes are a source of annoyance on the Peach-wall, by eating holes in the ripe fruit; it is not the quantity they eat, but the number of fruit they disfigure. Here they exist where the mortar in the joints is defective, and more especially under the coping, where they meet with suitable lodging. The best remedy is keeping the walls well pointed, so as not to allow them any place to secrete themselves; without this they cannot exist, for all the soft-billed birds, such as robins and hedge-sparrows, devour them eagerly if they can get at them.

Boiling Water.—Where frames are infested by Woodlice the most effectual remedy is to pour Boiling Water round the inside of the woodwork, care being taken not to touch the leaves or roots of the plants in the frames.

Cotton Wadding.—Where Orchids are attacked by Woodlice wrap little bits of Cotton Wadding round the roots, beginning a little way up the hard old portion, and finishing an inch or so below the tender green point. This plan is followed in Mr. Williams's collection at Holloway with the best results. The enemy does not pass the Cotton Wadding.

Horse-droppings.—They are extremely partial to Horse-droppings in a half-dry state; where they exist in quantities, a number of 10-in. or 12-in. pots may be kept, filled with drop-

pings, and placed amongst the plants, near the pipes, or wherever they congregate. If these be taken out and emptied once a week, the insects destroyed, and more droppings put in, they may be soon reduced in number, so as to be incapable of much harm.

Poisoned Parsnip.—Cut a Parsnip into small squares, get an old pot or saucepan to boil it in, mixing a small portion of arsenic; boil long enough to cook the Parsnip soft but not to break the pieces, then place them about the houses infested by Woodlice. They will soon attack the dainty morsel most ravenously, and pay the penalty with their lives, for they never return to their haunts. Great care should be exercised in the use of this remedy, as it is a most dangerous preparation, but most effectual for the destruction of Woodlice.

Potatoes.—Put a cold boiled or roasted Potato into a small flower-pot, cover the Potato with Moss, leaving a little hanging out of the pot by way of enticing the insects to enter; then lay the pot on its side in a corner of the frame. Woodlice feed in darkness, and at the approach of day they trot off to their hiding-places in cracks and crevices, or amongst the loose soil or bark; the Moss is therefore necessary to induce them to remain in the pot, to which they will flock in hundreds after having once tasted the Potato. Every morning the pots should be taken out of the pits and the insects destroyed. The same bait will serve for a week or longer. If properly attended to half-a-dozen pots so prepared will soon clear a frame of this troublesome pest.

Various.—If two or three tomtits be shut up in a conservatory for a few days, they will devour all the Woodlice without doing any injury to the plants.—If a toad or two be kept constantly in the house, they will devour a great number.—They may be kept from ascending standards and espalier trees by tying a piece of wool round the stems and the supporters.—Lay little heaps of Lettuce leaves in cool, quiet places, and examine them at dusk and daybreak. Catch and kill in any way you please; a pot of brine is a very good bath for the purpose.—Lay about also in the neighbourhood of choice subjects young Cabbage leaves slightly smeared over with rank butter or lard; catch and kill as before.—Lay about in cool quiet spots small heaps of fresh brewers' grains; catch and kill as before.—Where Woodlice abound, take some dirty flower-pots (always combine a little dirt of some sort with vermin traps, for vermin are extravagantly fond of dirt), and fill these dirty flower-pots with dry Moss and crocks mixed together. Place them where the vermin abound, and cover each with a tuft of dry Moss. Every other day proceed to catch and kill in this simple manner:—Have a large pailful of boiling water; take up a pot quietly, and quickly shoot out its contents into the water. You clear away your enemies by thousands in this way; there is no trap to equal a dirty pot filled with dirty crocks, and dirty (but dry) Moss.—If there arise any peculiar difficulty, such as a choice plant being eaten nightly, and you cannot catch the marauder, take a slice of Apple, and surround it with dry Moss, in a flower-pot. Take also a slice of Potato, and use it in the same way. Place these two pots one on each side of your delicate subject, but at a distance of 6 in. or so, and at dusk and dawn turn out the contents of each pot quickly, and it will be a strange thing if the marauder be not bagged.—Sweet Apples or Potatoes, scooped hollow and placed upon the pots, will attract them; if these are looked over every day, considerable numbers of the insects will be found underneath.—Melon frames and pits are their favourite haunts, especially the latter, if the brick-work be out of order, affording them means to secrete themselves. In the winter, whilst the pits are empty, point up all defects in the mortar, lime-wash, and remove all old soil or other material in which they can find shelter; and, as soon as the young plants are started, commence placing traps for them at once—do not wait until they exist in large numbers. It is the delay in taking means for their destruction until the place is swarming with them that renders them capable of so much mischief.

C. W. Quin.

Ribes bracteatum.—This new species is grown by Mr. I. Anderson-Henry on a wall in his garden at Edinburgh, where its Currant-like, but very large leaves are very effective. It is a distinct-looking species, but I cannot say what its flowers are like.—J. O.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

November 8.

This exhibition was in every respect a good one, and the attendance of visitors much larger than is usual on such occasions. Mr. Wildsmith, gardener to Lord Eversley, at Heckfield, showed a very fine collection of Grapes, and Mr. Roger Leigh, Barham Court, contributed such a collection of dessert and culinary Apples as one rarely has an opportunity of seeing, and to which allusion is made elsewhere. The prizes offered by Messrs. Sutton & Sons and Messrs. Carter & Co. brought together good collections of vegetables. In Messrs. Carter's classes alone there were no fewer than forty-five collections. Potatoes were especially well represented, and we have never seen cleaner and more shapely tubers than some sent by Mr. Peter McKinlay, of Beckenham, who obtained the premier award in each class. Messrs. Veitch & Son furnished a choice group of Orchids, Palms, and other plants, and a good collection of Japanese, large-flowered, and other Chrysanthemums, as did also Mr. Charles Turner, and other exhibitors.

First-class Certificates.—These were awarded to the following new plants:—

Casuarina sumatrina (Strahan).—This pretty little plant resembles, in certain respects, some of the Equiseta, the drooping branchlets descending in a most graceful manner from a slender stem; it was shown by Mr. Strahan, gardener to P. Crowley, Esq., Croydon.

Perpetual Carnation Scarlet Defiance (Turner).—A robust variety, having a dwarf branching habit, and bearing a profusion of crimson scarlet flowers which will be useful for cutting.

Miscellaneous Plants.—Messrs. Veitch & Son contributed a splendid group of Orchids, among which we noted the golden-lipped Oncidium tigrinum, Cypripedium Sedeni, Vanda cœrulea, the true V. insignis, Odontoglossum Alexandræ, Calanthe Veitchi, and other rare kinds. In the same collection was also a plant of the somewhat rare Hæmanthus cinnabarinus, bearing three trusses of cinnabar-scarlet flowers, having mahogany-coloured scapes and broad, bright green strap-shaped leaves. A group of richly-coloured Persian Cyclamens also came from the same exhibitors, together with hybrid greenhouse Rhododendrons, Aralias, and Palms. Good collections of Chrysanthemums came from several exhibitors; among those from Messrs. Veitch were the following:—Emily Dale, rich creamy-yellow; Fair Maid of Guernsey, a large Japanese variety, with pure white flowers; Erectum superbum, also a Japanese variety, with rosy-pink petals, sometimes tipped with white. Amongst yellow kinds Jardin des Plantes still maintains the superiority over all others both in form of flower and richness of colour. Mrs. Forsyth is a grand white variety; and John Salter ranks amongst the best of the bronze-coloured kind; Dr. Masters is a fine flame-coloured Japanese variety, single blooms of which measure from 9 in. to 10 in. in diameter. We also noticed some tall standard young plants of the small Pompone varieties, the best of all, perhaps, being Bob and Golden Cedo Nulli. From Mr. Turner came George Glenny, a creamy-yellow flower, with incurved petals; Mrs. George Rundlé; Gloire de Toulouse, a brilliant magenta flower, streaked with white; White Globe, and the Cossack, a brilliant scarlet-flowered Japanese variety. Mr. Turner had also well-grown bush-trained plants in the Pompone section. Amongst these we noticed the yellow, white, and pink varieties of Cedo Nulli, also Golden Aurora, Julie Lagravère, and Marabout. Messrs. Henderson had some handsome plants, amongst which the best were Prince of Anemones, a white-quilled variety with pink edges; Boule de Neige, a fine white flower with a creamy-coloured centre; Gloria mundi, an excellent yellow-flowered kind; and John Salter, a good bronze. Mr. B. S. Williams furnished a miscellaneous group of Orchids, Ferns, and other decorative plants in excellent condition, including Masdevallia Veitchi and a good specimen of Eucharis amazonica. Mr. F. Newman, gardener to Mr. Michael, of Cholmeley Park, Highgate, showed a well-grown plant of Dendrobium Wardianum bearing about eighty flowers. Messrs. E. G. Henderson & Sons sent a new seedling Echeveria of the E. rotundifolia type, and also plants of the delicate, grassy-looking Kyllingia monocephala, a Cyperaceous plant well worth attention for decorative purposes. Mr. R. Gilbert, of Burghley, furnished half-a-dozen well-grown specimens of double white and rosy Chinese Primulas, each plant measuring 2 ft. or more across and bearing a profusion of large rosette-shaped flowers invaluable for decorative purposes. Mr. H. B. Smith, of Ealing Dean, sent a collection of Persian Cyclamens in excellent condition. Mr. H. Cannell, of Swanley, Kent, showed six plants of the new Zonal Pelargonium New Life, a variety in the way of Vesuvius, except that the vivid scarlet flowers are irregularly but boldly striped with salmon and white. Messrs. J. & G. Lowe, The Nursery, Kingston Lane, Uxbridge, also sent two or three dozen well-grown and finely-flowered plants of Cyclamen persicum. A specimen of Lilium neilgherrense came from the Hon. and Rev. J. T. Boscawen, of Lanhorran Rectory, Probus. Mr. Wills, of the Anerley Road Nurseries, contributed a large and well-arranged group of decorative plants, and two of his new seedling Dracænas, viz., D. salmonea and D. Carolettæ, the last a dwarf variety with recurved bronzy foliage streaked and margined with crimson; being a desirable decorative plant, a second-class certificate was awarded it. Mr. W. Baker, gardener to W. H. Punchard, Esq., Poulett Lodge, Twickenham, showed two effective stands of cut blooms of Chrysanthemums; and a strikingly pretty golden sport from the quilled white Empress of India came from Mr.

Loader, gardener to J. B. Hennell, Esq., Ifield Court, Forest Hill. It is to be called Golden Empress of India. Mr. Westcott, The Gardens, Raby Castle, sent the yellow-fruited Capsicum Princess of Wales in good condition. Mr. W. Tillery exhibited a large-flowered seedling Chrysanthemum, of a rosy-lilac colour, named Mrs. Tillery; a distinct kind, but scarcely good enough for exhibition purposes.

Fruit.—Mr. G. F. Wilson, of Heatherbank, Weybridge, showed ripe fruits of the Japanese Diospyros Kaki; they resembled in size and shape some round smooth Tomatoes, but were of a soft orange-yellow colour, sweet in taste, but astringent. Mr. Woodbridge, of Syon House, also furnished fruiting branches of Diospyros Lotus, or European Date. Mr. Tillery sent a collection of Grapes, including Black Monukka, Welbeck Black or Tripoli, and Chaptal, a waxy-looking and highly ornamental sort, well worth a place in collections. Mr. R. Clarke, gardener to the Rev. A. D. Stackpole, Writtle, Welwyn, showed excellent Marie Louise Pears, and Mr. R. Gilbert furnished a basket of superior-looking Trebbiano Grapes, showing this to be a useful sort for the winter dessert as a white associate for Barbarossa. From Mr. C. Eyre came two dishes of Uvedale's St. Germain Pears, twelve fruits of which weighed 18 lb. 15 oz. Mr. Bennett, of Rabley Nurseries, Barnet, sent a plant of Garibaldi Strawberry in full bearing, some three or four of the fruits being ripe and others ripening. From Mr. Pearson, of Chilwell, came well-grown examples of his two new Grapes, Golden Queen and Mrs. Pearson, both first-class additions to white-fruited kinds, being good both in appearance and flavour. Mr. Ford, gardener to W. E. Hubbard, Esq., contributed a collection of fifty-five varieties of Apples and fifteen sorts of Pears, some of the Apples being very highly coloured and the Pears of more than average merit; a well-grown collection of Apples also came from Mr. W. Earley, Valentines, Ilford. Mr. Canning, gardener to Matthew Digby, Esq., Rochampton, sent a well-grown collection of dessert and culinary Apples—in all, twenty varieties—and ten sorts of Pears. Among the Apples the most remarkable were very large examples of Cockle Pippin, Court-pendu Plât, King of the Pippins, large and highly-coloured Beauty of Kent, and Blenheim Pippin, also very large and highly coloured, and a good sample of Mère de Ménage, an excellent culinary variety. Mr. Donaldson, gardener to Lord Chesham, showed a collection of Grapes, among which were Muscat Hamburghs, large in bunch and berry, a remarkably large bunch of Burchardt's Prince, good examples of Trebbianos, and Lady Downes Seedling, Alicante, and Muscats, a good cluster of Mrs. Pince's Black Muscat, and Royal Ascot, one of the late Mr. J. Standish's seedlings. A large and symmetrical Black Prince Pine-apple in capital condition came from Mr. W. Wildsmith. Mr. C. Ross, gardener to C. Eyre, Esq., Welford Park, Newbury, sent four remarkably handsome smooth-leaved Cayenne Pine-apples, to which reference is made elsewhere. Mr. Pragnell, Sherborne Castle Gardens, Dorset, showed four smaller fruit, of the same variety of Pine-apple, in excellent condition; and good Queens came from Mr. Gilbert, of Burghley, and Mr. Wood. Mr. Jas. Hunter, Lambton Castle, sent six fruits of a handsome seedling Pine-apple named Lady Elizabeth Lambton, the largest specimens of which would probably weigh from 8 lb. to 10 lb. each. On being cut they proved to be sweet and juicy, but not particularly rich in flavour. A good miscellaneous collection of Grapes came from the Society's garden at Chiswick.

Vegetables.—The prizes offered by Messrs. Sutton & Sons were keenly contested, the best collection being that sent by Mr. Pragnell, of Sherborne Castle, Dorset, who had Telegraph Cucumbers, James' Carrot, Student Parsnips, Sulham Prize Celery, Early Snowball Turnip, Reading Onion, Porter's Excelsior Potato, King of Cauliflowers, Imported Brussels Sprouts, Hartwell's Early Marrow Cabbage, Improved Dark Red Beet, and Ayton Castle Leeks. Mr. Gilbert, of Burghley, exhibited a remarkably well-grown group, in which we noticed King of Cauliflowers, Jackson's Tomatoes, Student Parsnips, Burghley Brussels Sprouts, Emperor Potatoes, Reading Onions, Snowball Turnips, King Coffee Savoy, and dark red Beet. Mr. D. Lumsden, who was third, had excellent dishes of Cardoons, Salsafy, Brussels Sprouts, Savoys, Cauliflowers, and Cucumbers. The competition for Onion prizes offered by Messrs. Sutton & Son and Messrs. Carter & Co., was a good one. Mr. Neal, gardener to S. Southey, Esq., Bampton, Faringdon, had excellent examples of white Spanish, as had also Mr. W. Cross, gardener to J. Hough, Esq., Peak House, Sidmouth. The kinds were shown under the names of Pinesfield Onion and Reading Onion, but all, and they were various, were simply varieties of the white Spanish. Messrs. Carter & Co. also offered prizes for vegetables, the best collection of which came from Mr. Pragnell, who had excellent dishes of a similar character to those staged in competition for Messrs. Sutton's prizes. Mr. G. T. Miles, Wycombe Abbey, was second with Long-podded Negro French Beans, long red Carrot, Brussels Sprouts, large red Tomatoes in excellent condition, Heartwell Cabbage, Leicester Red Celery, Musselburgh Leek, Reading Onion, Veitch's Autumn Cauliflower and Snowflake Potatoes. Mr. Baker, who was third, had a well-grown collection, Mr. Lumsden being fourth. Mr. G. Neal, Bampton, Faringdon, had the best three examples of Heartwell Cabbage, for which Messrs. Carter offered special prizes, Mr. J. Pink being second, and Mr. Baker, of Broad Street, Bampton, third. This appears to be an excellent variety, and well worth a place as a distinct sort. Mr. P. McKinlay was first in Messrs Carter's class for eight dishes of Potatoes; among his varieties were King of Potatoes, Snowflake, Porter's Excelsior, Breadfruit, Bountiful, and Scotch Blue, all of excellent quality. Mr. G. F. Miles, who likewise had a select group of eight dishes, was second; and Mr. J. Baker, Broad Street, Bampton, third. Messrs. Sutton and Son's prizes for Potatoes were also well contested, the first, for twelve dishes, being awarded to Mr. P. McKinlay, and they were the best twelve dishes we ever saw staged together; his white varieties were Excelsior Kidney (a smooth-skinned shapely tuber), Snowflake, King of Potatoes, Climax, Model, and Porter's Excelsior, all of first-class merit. His coloured sorts consisted of Emperor, Red-skinned Flour-ball, Scotch Blue, Salmon Kidney, Purple Ashleaf, and Hundredfold Fluke. Mr. Jas. Pink, who was second, had also an excellent collection; amongst his varieties we remarked Model, Red Emperor, Bresee's Prolific, Giant Kidney, Birmingham Prize-taker, Snowflake, and others. Mr. Lumsden, who was third, had good examples of well-known sorts. Mr. C. Osman, of the South Metropolitan District Schools, sent eight handsome heads of Veitch's Autumn Giant Cauliflower, and Mr. C. Turner, of Slough, showed a basket of Bailey's selected Early Cabbage, and also exampes of Bailey's selected Red Beet, and Early Ulm Savoy. Messrs. Carter and Co. exhibited an attractive stand of Potatoes consisting of nearly all the new and standard sorts, various kinds of Onions, and ornamental Gourds. Mr. R. Dean exhibited a large collection of Potatoes, among which we noted some good examples of Success, a new American Kidney, large in size, and having a clear crackled skin; also Fenn's Bountiful, one of the prettiest of all Red Kidney varieties; White Emperor, a clear, white-skinned, round variety; Lye's Favourite, similar in shape, but blotched with red around the eyes; Brownell's Superior, a large Red Kidney, evidently a good exhibition variety; Worthington G. Smith (Fenn) a smooth-skinned, round variety of average size, and evidently good in quality; Woodstock Kidney, another of Mr. Fenn's seedlings, said to be of excellent quality. It may be noted here that none of Mr. Fenn's varieties are of large size, his object being to produce medium-sized Potatoes of superior quality. Mr. Dean's collection also contained some large and well-formed Vegetable Marrows, amongst which Long-ribbed White, Dean's Selected Market and Early Prolific were conspicuous for size and colour. This collection was tastefully set up, the centre of the table being occupied by a row of Palms, succulents, and scarlet-berried Solanums, which set off the Potatoes and Marrows on either side of them to good advantage.

OBITUARY.

We have to announce with regret the death of one of the patriarchs of English gardening in the person of Mr. Edward George Henderson, the founder and proprietor of the Wellington Nurseries, St. John's Wood, who died on the 4th inst. at the good old age of ninety-four. He was the eldest son of Mr. Andrew Henderson, the founder of the Pine-apple Nursery, Maida Vale. He remained with his father until the beginning of the present century, when he commenced business on his own account at the nurseries in Edgware Road known as Vine Place, Mr. John Andrew Henderson, the younger son, remaining at the Pine-apple Nursery, in which he eventually became a partner, and continued to be so until he retired entirely from business. In those days, fruit-growing not being nearly so extensively carried out in private places as at present, both Pine-apple Place and Vine Place Nurseries, in addition to the culture of popular plants, were principally devoted to the culture of fruit, which was grown in these establishments in large quantities; and the fact may be worth noting that the Pine-apple Nursery produced the best Grapes, and that the Vine Place Nursery furnished the best Pine-apples. About forty years ago the late Mr. Edward George Henderson left the Vine Place Nursery and removed to the Wellington Road Nursery, an establishment ably conducted by him until about twelve years ago, when he retired from taking an active part in the business. It may be added that, notwithstanding his great age, the day before he died he walked across his room and enjoyed his meals as usual, but, from his short breathing, he evidently knew (when he retired to rest) that his death was near, an event for which he had some time been desirous, and to which he looked forward with calm resignation.

We have also to record the death of Mr. R. Budd, late of Luton Hoo Park and formerly of Cobham Hall, which took place on October 26, at the early age of forty-five, after an illness of several months.

NOTES AND QUESTIONS—VARIOUS.

Thujopsis dolabrata variegata.—This measures with us 10 ft. 3 in. in height and 7 ft. 6 in. through. Are there larger trees of this Thujopsis elsewhere?—G. M. B., *Pennyhill, Bagshot.*

Two Pernettyas.—Few plants offer more attractions to the lover of dwarf rock shrubs, than two new or uncommon Pernettyas, viz.—P. pilosa, a kind possessing a neat and graceful habit, white flowers, and black fruit, each berry nearly as large as a fairly-grown Hamburgh Grape, and P. candida, an equally attractive kind, with white fruit. Both plants may be seen in the Lawson Nurseries at Edinburgh.—J. O.

A Bright Green Edging for Conservatory Shelves.—In one of the long plant-houses in Messrs Fraser's Nursery at Lea Bridge, I noticed that the shelves upon which the plants are set are edged with Selaginella denticulata, growing in a narrow ridge of soil. In this the plants grow freely, and if kept well supplied with water, soon droop over the edges of the shelves in a very pleasing and effective manner.—S.

Notice.—"H. G. Bedford," "A Constant Subscriber," "T.," and others are reminded that we never name plants or fruits unless the full address of the sender be given. The printed name of a plant or fruit can be of no interest to any but the person who sent it, and therefore we always reply by post upon receiving the address.

No. 261.] SATURDAY, NOVEMBER 18, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ASPARAGUS CULTURE AT COLCHESTER.

THE very large Asparagus grown at Colchester by Mr. Harwood, and which was alluded to at p. 29, is grown as described below:—In the cultivation of Asparagus it will be found the best plan to proceed as one would when building a house, that is, to form a good foundation, for wherever the beds are improperly made, it is of little use attempting to mend them; they should be destroyed and fresh ones made. A good open situation should be selected, then well manured and deeply dug for the reception of the seed, which should be sown early in the spring, to enable the plants to become strong the first year. Having obtained the Asparagus plants (which should be one-year-old), prepare an open piece of ground by double trenching during the winter previous to planting, then prick it over lightly in February or March, giving it a coat of well-decayed, strong manure; by that time the plants will have started into growth, and in taking them up you will be able to see if any have been destroyed by frost during the preceding winter, which is no uncommon occurrence: the heads of such plants have a blind appearance, although the roots look strong and healthy; the live plants will have small heads about ¼ in. in length. In making the beds, the proper way is to draw drills about 5 in. deep with a good-sized drill-hoe; then separate the plants, placing half the roots of each plant one way and half the other along the drill, and draw the earth over the crowns with the hand, in order to keep them in proper position; the roots may lap over one another slightly, but that depends upon their size, and the crowns of the plants should never be closer to each other than 12 in. I prefer three rows on a bed, but a large proportion of cultivators for market plant four. The rows should be about 15 in. or 16 in. apart, and abundance of room should be left between the beds for earthing up. I always sow spring Onions over all the ground the first year as soon as the Asparagus is planted, care being taken to thin out all which are too near the crowns of the Asparagus plants; by this means a crop is obtained off the land the first year. As soon as the Onions are gathered and labour begins to get slack, I add a good coating of rotten manure or lime dust; soot or salt will answer the purpose if the first be not obtainable, but the manure is to be preferred, as it keeps the frost from the crowns in the winter, and enables the heads to come easily through in the spring; then I apply sufficient earth from the alleys to cover the manure. This is the period when many spoil their Asparagus beds, for too much earth on the plants the first year prevents them from pushing vigorously through, and the plants cannot recover themselves that season; the following year an additional supply of earth is placed on the beds, and the plants are thereby destroyed altogether. The second year I only manage to secure a row of Cucumbers in each alley, after having been previously manured. The third year, about the middle of March, I begin to face up the beds, the liability of the sides to slip being a sufficient reason for not commencing earlier. The cost here is about 1s. per square rod of land. The quantity of soil should not be so much the third year as is required for the crop permanently, but for market purposes it is necessary to cover with a sufficient quantity, so that the Asparagus can be cut at least 7 in. long. I send all my Asparagus to Covent Garden Market; the average height of the bundles is 9 in., and to enable the plants to attain that I have to mould up pretty high. As to cutting, on which a great deal depends, I have some beds varying in age from six to sixteen years, most of which have been entirely under my own care, and I have found the result most satisfactory, having secured the first prize at the Colchester and East Essex Exhibition for the last five years against keen competition. The following are the weights of the various prize bundles, 10 in. long:—1872, 50 heads, 7 lb.; 1873, 50 heads, 7½ lb.; 1874, 50 heads, 8 lb. 14 oz.; 1875, 50 heads, 8 lb. 2 oz.; and 1876, 100 heads, 15½ lb. The third year I commence to cut all heads till the 1st of June, after which one head is left to each plant, the others not being cut until the last week of that month, by which time each plant will be represented by a head, and will be greatly benefited by such cutting. Of course the above plan only refers to young beds. The fourth year I cut all until the end of June, those that are too small being knocked off with my knife. There is no advantage in leaving a lot of heads to each plant; for a grower in my neighbourhood, who would not cut on the third year, thinking to make quite sure of the prize at the exhibition, left some beds even till the fifth year, the result being an enormous number of heads, but quite small in size. The season this year being very late, my produce has been quite 15 per cent. below the average; and from the appearance of the beds at the end of July, heads could have been cut for another week without injury to the plants. Large quantities of heads left during the cutting season, added to the numbers which come up when the season is over, cause a proportionately large number of eyes to form on the crowns, and the crop is more plentiful, but the heads are smaller. The only objection to late cutting is, that sometimes the last head is taken off a weak plant, the result of which is the destruction of the plant itself. For market purposes Asparagus should be cut as soon as it can be held with the finger and thumb, for as soon as one head ceases to draw the sap, another is forced up; and as the season for cutting is short, the cultivator who cuts earliest and closest will obtain by far the greatest number of bundles. As a rule, I never cut after June 30. As to the kind of Asparagus to grow, careful selection will be found the most efficient means of securing the best, my stock being the same which my father had twenty years ago. With regard to manure, salt is beneficial on loose ground, but it is dangerous on clay, and should be used with extreme caution. I sow about 4 lb. or 5 lb. per square rod, and dig it in on the beds and in the alleys in November, using waste salt for the purpose. Asparagus is a gross-feeding plant, and even a superabundance of the strongest manures will never injure it.

ACÆNA PULCHELLA FOR ROCKWORK AND VASES.

THE genus Acæna is wholly confined to the Southern Hemisphere, and though possessing no attractive features as regards the flowers, if we except those intensely crimson processes that give such a charm to the little New Zealand A. microphylla, nearly all the species have a speciality as regards habit of growth that renders them well deserving of general culture. When visiting a place in which a very extensive rockwork was formed, a couple of years ago, I found an illustration of the adaptability of Acæna pulchella as a rock-plant. It was growing on a ledge, above a mass of rock some 4 ft. high, and its branches, which were covered throughout their whole length with pretty bronzy divided leaves, were suspended in graceful festoons over the face of the stone, even down to the rocky pathway, over which many of them spread in wild profusion, and often measured as much as 7 ft. or 8 ft. in length, the result of but little more than one season's growth. So lovely indeed was the effect, that the idea at once suggested itself to my mind that the real value of this plant had never been fully realized; for, evidently it would make a graceful and elegant accessory to the decoration of a vase of flowers. If those who cultivate it will only select several of those long trailing shoots, they will soon find and thoroughly appreciate its value in this respect. J. C. NIVEN.

Musa Ensete as a Winter Decorative Plant.—In a stove or warm conservatory young plants of this Musa are very pretty during the dull months of winter, when every fresh green leaf is an acquisition. Plants of it, raised in the Pine Apple Nursery from seeds sown early in August last, and grown on rapidly in light loam and manure in a temperature of from 55° to 60°, are now from 5 ft. to 6 ft. high, and thickly furnished with handsome foliage, each leaf measuring from 3 ft. to 4 ft. in length. Many of the plants are now being hardened off previously to their being introduced to the conservatory, where they will, in all probability, last in good condition for a long time. Copious waterings are necessary to their welfare whilst growing in heat, but when placed in cooler quarters water should to some extent be withheld.—S.

NOTES OF THE WEEK.

The Apple Supply.—Covent Garden is piled high with barrels of American Apples, which are more numerous than they have ever been seen before: so it is in the fruit markets of other towns. The crop being small in England, very high prices would have been obtained for home-grown fruit, had it not been for the very extensive importations from America. Among the various good Apples from the "States," we notice a spurious Newtown Pippin, or one bearing that popular name. It is a hard shining Apple, about the size of the Newtown, and somewhat of the same colour, but with little else to recommend it. In France there is a heavy crop of Court Pendu Plat, which is imported in large barrels and sold wholesale, under 4s. a bushel; somewhat cheaper still are the supplies of Bellefleur from Holland, where this year there was a large crop of this variety.

The Gardens at Bournemouth.—These are still gay with Chrysanthemums, of which I never saw so many cultivated in the open air; almost all shades of orange, buff, yellow, brown, red, and white may be found among them. The late severe frost has only spoilt the heads that were out; fresh blooms are now appearing. Two other plants keep the gardens gay: one is the common Arbutus, loaded, as it is, with flowers and red and yellow fruit; the other is a Shrubby Veronica, which is flowering freely close to the sea. In a climate like this the Schizostylis should be more used than it appears to be. —Salmonicefs.

Abercairney Seedling Grape.—Mr. J. Hawley, of Leamington, sends us a photograph of a large Vinery, one side of which is planted with this Grape, the fruit of which—a heavy crop—is now being cut, and of which he gives the following description:—About four years ago I exhibited it at South Kensington, when the Fruit Committee pronounced it to be the true Alicante. It was recommended to me by Mr. M'Intosh, formerly of Drumlanrig, and I obtained the canes from two Scotch firms, one at Glasgow, the other at Edinburgh. It is a first-rate cropper, colours well, and keeps well. The house has been planted eight years; there are eighteen bunches to a rod, each bunch averaging 1½ lb.

Sweet Capsicums.—We notice these in Covent Garden in Mr. Gulliford's shop in the Central Row. They are much grown in Spain and other parts of Southern Europe. It is a large variety of the common Capsicum without pungency. The green form is quite free from a trace of this. When ripe, there is a very little warmth in the flavour of the fruit. There is, however, some variation among the fruits, and occasionally one may be deceived by finding a pungent one among them.

Callipsyche aurantiaca.—This plant—one rarely seen in English gardens—is now in bloom in Messrs. E. G. Henderson's Nursery. It is an Amaryllid, which, like the Guernsey Lily, produces flowers before the leaves are developed. The blossoms, which are tube-shaped, are of the brightest golden-yellow, and are produced in a whorl on a long, fleshy-green stalk. It is a plant which at this season will be found valuable for conservatory or greenhouse decoration.—S.

Romneya Coulteri.—We have been gratified this week by seeing at Glasnevin the first flowers of the singular Californian Poppywort (Romneya Coulteri). It is a strong-growing, much-branching plant, with lobed, glaucous foliage. The flowers are large, nearly equalling in size those of the white Water Lily; colour, pure white; the stamens are very numerous; anthers, golden-yellow. This must be a very showy plant in its own country, as it is apparently very floriferous; but it is doubtful if it will be so valuable in these isles, where the summer-heat is not sufficiently powerful for perfecting its growth and fully developing its flowers before our early autumn chills affect it. The plant, which has just opened its first flowers in the open border at Glasnevin, and is somewhere about 4 ft. high and 3 ft. through, with numerous lateral branches, each, as well as the terminal branches, bearing a flower-bud at the point, was received by Dr. Moore only last March, and then, we believe, a mere cutting. From this it will be perceived that it is a vigorous grower. The flower that has expanded is the one on the main stem, but it appears to be doubtful, owing to the lateness of the season, if those on the laterals will ever open. The value of this plant for the mixed border will not be tested until the coming year, when it can be seen if, with the aid of the slight protection which Dr. Moore contemplates, it will be sufficiently hardy to stand our winters, and, with an early start, be able to reach the flowering period while the sun is still powerful. We have gone more into particulars with regard to this plant than we otherwise would, by reason of its being so identified with three distinguished Irishmen. It was first described, and the genus founded, by the late Dr. Harvey, Professor of Botany in Trinity College, Dublin. The generic name commemorates one of the most gifted of our countrymen—namely, Dr. Romney Robinson, of Armagh, whose fame is world-wide; and the specific name that of the late Dr. Coulter, also a professor in our University, and well known in all the scientific circles of Europe for his botanical attainments, and after whom the Leguminous genus Coulteria is named. It was he, too, who during a lengthened residence in Peru, made Cacti a special study, and sent thence to the University Botanic Garden the largest collection of these singular plants ever sent by one man to Europe.—"Irish Farmers' Gazette."

Illustrations of New Plants and Fruits.—We beg to remind nurserymen and others of our desire to illustrate in colour the finer new plants and fruits, and shall be obliged by any specimens that may be sent to us for that purpose. Subjects of the highest merit only are desired.

Viola La Patrie.—Large quantities of this Viola are now being imported to our London nurseries from France, and many of the plants are now in bloom. When established and somewhat acclimatized, this will probably prove to be a valuable addition to late-flowering hardy plants.

Market Vegetables.—Excellent samples of forced Seakale may now be obtained in Covent Garden Market, and Rhubarb is promised in about a week's time. Truffles, in good condition, are also now obtainable, and Mushrooms from open-air beds in London market gardens are tolerably plentiful. Cucumbers and all kinds of salading material are excellent, as are also Tomatoes from pot plants struck from cuttings inserted in July.

Cure for the Phylloxera.—Dr. Theodore Schuchardt, chemical manufacturer, of Görlitz, Prussia, announces that he is ready to supply the pure and dry sulpho-carbonates of soda and potash, the much vaunted remedy for the Phylloxera of the Vine, at 150f. and 160f. per 100 kilogrammes respectively, free on board at Hamburgh.

Antidote for Poisonous Mushrooms.—Prof. Schiff, of Florence, states that he has discovered that poisonous Mushrooms contain a common deleterious alkaloid which he has named "muscarine," the effects of which are neutralized by the alkaloids atropine and daturine, which are now sold by Italian pharmacists in those districts in which poisonous Mushrooms are common.

Destructive Snowstorm.—This part of Suffolk was visited the other day by a most destructive snowstorm, which did great damage to trees and shrubs. The autumn, up to the first week in November, has been exceptionally mild and genial; even comparatively tender bedding plants in the sub-tropical department have been, until just lately, in excellent condition, as have also been herbaceous and ordinary bedding plants and deciduous trees and shrubs, a circumstance which accounts for much of the destruction that has been committed amongst them. On Wednesday evening, November 8, after a cold, stormy day, with the wind in the north-east, a very heavy storm of snow and sleet, accompanied by thunder and lightning, occurred, and with just sufficient frost to congeal the whole mass thickly on the foliage, the result being that the accumulated weight broke off the topmost branches, and these in their downward course carried the lower ones with them. Even Oaks have suffered severely, some woods and plantations being almost destroyed, scarcely a tree being left intact. Single specimens in the open park withstood the storm better. But even these have lost some branches on their most exposed sides. Common Hawthorns, of which we have many fine old specimens, have suffered severely. Amongst evergreens the Cedar of Lebanon is, as usual, the greatest sufferer, its large flat branches soon becoming loaded sufficiently to break them down. In one instance the head of a fine specimen, the stem of which is 12 ft. in circumference at the base, broke completely off, and the tree has become an entire wreck. Telegraph wires were broken in many places, and roads rendered impassable. On the two following nights the frost amounted to 8° and 10°; vegetation, therefore, has received a sudden check.—James Groom, *Henham.*

Colorado Potato Beetle.—A reply, furnished by the Canadian Minister of Agriculture to a despatch of the Secretary of State for the Colonies, places the possible introduction of this beetle into Europe in its true light. It shows, among other things, that it is quite as likely to be brought here with any kind of merchandise as with Potatoes, and that merely stopping the importation of American Potatoes, as is done in Italy and elsewhere, does not necessarily prevent its introduction. Events, indeed, have shown that it is not cargoes but ships that may provide the means of transit for it across the Atlantic. If all American outward-bound ships were provided with dead specimens of the beetle, so that live ones might be readily distinguished, it might lead to its early destruction should it visit the Potato crops of Europe.—A. D.

THE INDOOR GARDEN.

THE NECKLACE-FLOWERED CHAMÆDOREA.

(C. GEONOMÆFORMIS).

THIS pretty little Palm was introduced from Guatemala by Warscewicz to the Royal Gardens at Berlin, whence it was sent by M. Wendland in 1857 to Kew, where it has repeatedly produced graceful racemes of pale flowers. It grows from 2 ft. to 4 ft. in height, and the Kew plant is said to have borne male and female spadices alternately, a fact which has been observed to be the case with some Palms in their native habitats. The accompanying illustration gives a reduced view of a plant about 2 ft. in height, a stage at which it is very useful as a decorative plant. The only plan of propagating this species is by means of seed, so that like many others of its class it is as yet rare in our gardens, but its habit, especially

Chamædorea geonomæformis.

when in flower, is so distinct and graceful that it well deserves the notice of those who admire dwarf Palms. A coloured figure of it is given in the "Botanical Magazine," t. 6088. It succeeds well in a compost of fibrous loam and sand in a well-drained pot, and when in growth it requires a copious supply of water. B.

RIVINA HUMILIS AS A TABLE PLANT.

THIS by itself makes a good vase plant, either for the drawing room or the dinner table, its beauty being enhanced under artificial light. Its long racemes of brilliant coral berries droop in a graceful manner around the base of the plant, and, owing to the continuous way in which it produces its flower-spikes, it may be said to be at once both a flowering and a berry-bearing plant. Although by no means a difficult plant to cultivate, yet it is seldom met with in good condition; naturally it has a tendency to make a single-stemmed, spindly growth; but charming plants of it in 4-in. or 5-in. pots, with from two to three dozen long racemes of fruit in different stages of development, may easily be secured. For plants to come in in autumn and winter, we sow the seed in March in a brisk heat, and as soon as the seedlings are large enough to handle, we pot them off singly in thumb pots in a light, rich compost, and place them in a position close to the glass, but shaded from bright sunshine. A moist stove or pit suits them admirably, as they must be kept growing freely; for if the wood once become hard, they do not break freely when stopped. Shift them, therefore, into larger pots before they suffer from want of pot room, using pots according to the size of specimens required, and regularly pinching in until the plants are well furnished with side-shoots. They should then be transferred to a light airy shelf in a forcing pit, where they will quickly mature a bright head of coral berries. A regular supply of moisture at the root is at all times essential to their well-being, and a little weak manure and soot water, when finally swelling the fruit, will be found to be advantageous, and tend to keep the foliage green and healthy. Plenty of atmospheric moisture is essential to their healthy development, as red spider is apt to attack the foliage when the atmosphere is dry, and with its loss or discoloration all pretensions to beauty are at an end. JAMES GROOM.

Henham.

Intermixing Chrysanthemums with Standard Pelargoniums.—A few years ago much was written in reference to the superiority of the Zonal Pelargonium over the Chrysanthemum, and *vice versa*, for late autumn and early winter displays in the conservatory. Each plant had its admirers, but I never recollect seeing a mixture of the two recommended, a circumstance which I have often wondered at, seeing what a pleasing effect a few Standard Pelargoniums make at this season, judiciously dotted about amongst the Chrysanthemums. The fine scarlet blossoms of the one are seen to good advantage, surrounded by the delicate blooms of the other, and that monotony which is apt to pervade a collection of Chrysanthemums is thus obviated. Any one who will take the trouble to prepare a few of the best winter-flowering Zonal Pelargoniums as standards, for the purpose just indicated, will, I am sure, be amply repaid by the result.—H. HARRIS, *Denne, Horsham.*

Shaded Walls and their Ornamentation.—Where walls are very much shaded it is often difficult to find effective coverings for them. In a place where Creepers have been planted from time to time, but only to dwindle and die, we have tried the following with good results:—We placed the trellis on which the Creepers were trained 6 in. from the wall and filled up the intervening space with Moss and soil. We commenced at the bottom with a layer of Moss, then soil in which the plants were placed, and in this way we proceeded, placing Moss and soil alternately, until the whole was finished. Among the plants Begonias occupied a prominent place; these were mixed with Ferns and Lycopods. And now in place of unsightly and unhealthy Creepers we have a beautiful wall, on which the large leaves of the Begonias have a fine effect. Among Ferns Platyceriums are well suited for the purpose if placed near the top, where their forked overhanging fronds make a good finish. Davalias also soon overrun a wall of this kind, and mix well with the Lycopods. —W. B. K., *Derby.*

Ageratum Countess of Stair.—Visitors to the recent fruit and vegetable show at South Kensington may have noticed a few dwarf plants of this pretty Ageratum which were placed at the back of a collection of Potatoes exhibited by me. To have these in full bloom at this time of the year may be of little moment to some, but where house room is limited, any bits of bloom at this period are highly valued. These plants had been cut over early in September, and having started a second bloom, were lifted into 48-sized pots, and in these they have been blooming for some time past. This Ageratum has a close, compact habit, and is well suited for pot culture; moreover, it furnishes a delicate pleasing hue of colour that is far from abundant at this time of the year. Those who have plenty of house room and a gentle warmth will have no difficulty in keeping it in bloom for some time.—D.

Viola Blue-bell and Others.—It has recently been remarked in reference to Viola Blue-bell that it was not adapted for spring decoration. This is a mistake, as it is one of the earliest of all the bedding Violas, and old-established plants of it produce a few blooms all through the winter. Earliness to flower in a Pansy or Viola, however, depends much upon the opportunity which it has had in the previous autumn to develop a robust growth; and the earlier this is done, the sooner will the plants flower. I find, as a rule, that amongst Pansies the earliest are Blue King, Bridal Wreath (white), Bedfont (yellow), and Violet King (purple). Of the Viola section, Blue-bell, Yellow Boy, White Swan, and The Tory (purplish-blue) are the best for spring decoration.—A.

Ipomœa cœrulea.—We have this now in bloom in the hothouse, and it is so exquisitely beautiful that it is really surprising we do not more frequently see it amongst our indoor winter plants. It was raised from seeds sent to me from India.—G. F. WILSON, *Heatherbank.*

Seedling Begonias for Conservatory Decoration.—In the large conservatory at the Pine-apple Nursery, seedling plants of Begonia geranioides have been for some time past, and still are, flowering in profusion. The seed from which they were raised was sown in a cool house, and the plants have never been subjected to any fire-heat whatever. Plants thus treated last long in flower, and are most valuable for cutting for bouquets, or for furnishing the front rows of conservatory stages. The flowers, which are wax-like, are pure white, with the exception of the anthers, which are yellow, the two colours forming a pleasing contrast.—S..

THE FLOWER GARDEN.

ATRAGENES.

THE ATRAGENES are all hardy, slender-growing, deciduous climbers, with opposite, variously-cut leaves, and with numerous, branching, weak stems, which are always divided ternately, and form knots at the joints, from which the leaves and flowers protrude together the following season. They are all well suited for training up posts or against bare walls, and thrive in any good garden soil; and, from the abundance and beauty of their blossoms, and the neat appearance of the plants (which are not in the least rambling), they are extremely ornamental, and deserve a place in every choice collection of hardy climbers. The Atragenes very much resemble Clematises, but differ from them in having numerous petals, which are shorter than the four sepals, in being destitute of an involucre, in the carpels being terminated by a bearded tail, and in their producing leaves and one flower from the same bud contemporaneously in the spring of the following year.

The Alpine Atragene (A. alpina).—This plant forms a slender climber, about 8 ft. or 10 ft. high, found on the mountains in various parts of Europe, especially on calcareous soil in Austria, Carniola, Piedmont, Genoa, Dauphiny, the Eastern Pyrenees, and South Switzerland. Its large blue flowers are produced from May to July, singly, on long stalks; the leaves are biternate and deciduous; the leaflets ovate-lanceolate, acuminate, and serrated on the edges; decaying leaves brownish, and parting freely from the stem, but forming knobs at the joints from which the leaves and flowers protrude together the following season; the flowers are axillary, bright blue, and rather large, with from ten to twelve petals, somewhat spathulate, blunt, and shorter than the calyx; flower-stalks, one-flowered, springing from between the leaves and longer than them; the sepals are oblong, pointed, and twice the length of the petals, blue on both sides, linear at the base, and dilated at the apex; seeds white, and terminated by a bearded tail. The Alpine Atragene is a very ornamental, slender-climbing plant, and is quite hardy.

[Synonyms—Clematis cœrulea, C. alpina, and Atragene austriaca.]

The Siberian Atragene (A. sibirica).—This is a native of the mountain districts of Siberia, as far as the Eastern Ocean, covering the shrubs and underwood much in the same manner as Clematis Vitalba does in England. It is a less robust and branching kind than C. alpina; the flowers are also longer, but less numerous, and the leaves narrower, more acute, longer, and of a somewhat lighter colour; the leaves are biternate or sometimes ternate, with the leaves narrow and rather small; the leaflets are oblong, lanceolate, acute-pointed, and sharply serrated on the margins; the flowers are white, axillary, with the tips lying close together rather than spreading, and are produced in abundance in June; the flower-stalks are one-flowered, and almost equal in length to the leaves; the petals are emarginate at the apex and not obtuse; carpels or seeds sessile, feathery, and white when ripe in August and September. Atragene macropetala is only a variety of it with longer petals.

[Synonyms—Clematis sibirica and Atragene ochotensis.]

The American Atragene (A. americana).—This is a fine, robust, hardy, deciduous climber, from 10 ft. to 15 ft. high; native of North America, in shady places on the sides of rivulets, climbing and creeping among loose rocks in New York and Pennsylvania, near the foot of the Blue Mountains. It is a handsome and distinct kind, with the leaves mostly disposed in whorls of four, ternate, and not opposite in alternate, decussating pairs, as is the case with the other kinds; the leaflets are cordate, lanceolate, acute-pointed, entire, or somewhat lobed or serrated, and stalked; decaying leaves dark brown; the flowers are very large, campanulate, purplish-blue, and are produced from May to July very freely; petals acute, flower-stalks one-flowered; sepals oblong-lanceolate, bright purplish-blue, and in four; fruit or carpels white and feathery.

[Synonym—Clematis verticillaris.] GEORGE GORDON.

Culture of Lilium Wallichianum.—As I was fortunate enough to flower the Lily from which your plate (see p. 426) was taken, you will perhaps allow me to supplement the account given by Mr. Elwes by stating that the bulb, which was a small one, kindly given to me by Mr. Barr, was grown in a deep, narrow pot used for Gladioli, the soil consisting of sandy turf broken up and mixed with a little coarse leaf-mould and bits of broken stone. It started into growth late in June, and when the foliage began to expand was syringed overhead every day: it bloomed in a common orchard-house. I suppose the treatment suited it, as the bulb has increased considerably in size, and thrown up two strong stems this year—one too many, perhaps, as otherwise it might have bloomed again, as I hope it may do another season.—A. RAWSON, *The Vicarage, Bromley Common.*

Good Drainage necessary for the Cloth of Gold Rose.—In THE GARDEN (Vol. VIII., p. 514) "A. G." asks how this Rose can be made to blossom. At Dryburgh House, Berwickshire, there is growing on the front of the house facing the south, a Cloth of Gold Rose, which flowers every season nearly as freely as Maréchal Niel. After making every inquiry respecting it, I came to the conclusion that thorough drainage is the cause of its blossoming so freely. On examination I found that 2 ft. of stones had been put into the carriage-way, and that close up to the house, where this Rose has been planted, two barrow-loads of stones had been taken out and the space filled in with good turfy loam well mixed with old manure, which is all the plant has to sustain it. I further found, however, that the roots had extended themselves beyond the soil and far out amongst the stones, which are mostly round boulders taken from the river. I may mention that Dryburgh House stands about 100 yards from the river Tweed, and over 100 ft. above the bed of that river, so the subsoil water must be pretty well drained off.—JOHN DOWNIE, *Pinkhill. Corstorphine.*

"Salmoniceps" on Rock Plants.—The difficulties named by "Salmoniceps" (see p. 397) are solely of our own creating. Alpine plants do not spread into healthy, effective tufts, because there is not sufficient space in the "holes" allotted to them between the stones. What they want is suitable earth to spread over, with here and there a ledge or stone, their usual position in gardens being a small spot of earth among stones; forty stones are frequently used where one would do. As to dividing the plants nothing is easier, and they always ought to be divided into carpets or groups. It is much better to begin the culture of Alpine plants in any common border, even in an open field, than in the objectionable, and to the plants most baneful "rock-work," which is now erected in all sorts of gardens.—V.

Advantages of Mulching.—I have never in any English garden seen mixed flowers out-of-doors so bright and fresh as I beheld them in the Tuileries Gardens in the summer of 1858, which was remarkable for intense heat in the months of July and August, at which time the flowers in the gardens just named were quite dazzling, and I observed that there was a dressing of Moss, leaves, or straw on the surface of the earth around and between the plants, which was only seen on minute inspection, and did not in the slightest degree diminish the beauty of the beds, which were carefully watered after sunset, and no doubt the dressing just alluded to retained the moisture and was the cause of the freshness and beauty observable in the flowers and leaves in question. In the same year I noticed an admirable plan pursued in the case of some large trees which had been transplanted and which throve in a remarkable manner. Each tree was furnished with a piece of lead, which encircled its stem in the form of a cup, just under the lower branches, and below this the stem was wound round to the ground with wet hay-bands, the moisture in which was kept up by the cup being filled each day with water, which escaped very slowly into the hay-bands and kept the stem of the tree constantly moist. Having had two Magnolia trees nearly killed by the severe winter of 1860 (the roots having been left without protection, and being near the surface of the ground), the above plan was tried, and has succeeded perfectly, the water application being discontinued when the heat of summer was over, and dry hay-bands were substituted for protection during the winter. —VIATOR.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Omphalodes Luciliæ.—This charming rock-plant, which often makes such slow progress, is found to thrive freely in limestone fissures in the rock-garden at York. It is always best in a raised and sloping position.—V.

Seedling Daisies for Autumn Blooming.—The produce of a pinch of seed of the double-flowering Daisies, if sown in spring, and the plants pricked out when large enough to handle in good sandy soil, will make pretty edging plants at this season. In order to have the best possible display of colour, it is, of course, necessary to obtain seed from a good strain of flowers.—S.

The Tar Weed Hardy in Scotland.—The Tar Weed is the name applied by the Californians to one of the most graceful little bushes that exist; it is given owing to the strong odour emitted by the plant, which forms a complete carpet in the woods in many parts of the hilly region of California. It may be seen now and then in glasshouses under the name of Chamæbatia foliolosa, and will be remembered by many for its finely dissected and graceful foliage. With Mr. M'Nab this has proved quite hardy on the rock-garden at Edinburgh. It also flowers and looks as well as in its native country. Lovers of hardy flowers will be glad to welcome it among their Alpine shrubs, &c.—V.

THE FRUIT GARDEN.

THE MADRESFIELD COURT GRAPE.

Mr. Baines, (see p. 446) has, I believe, furnished a reliable clue to the proper cultivation of this fine variety of Grape. When it first made its appearance I purchased a fruiting plant of it and had it inarched on a strong-growing, seedling black Grape of no great promise. As it was sent out as a late-keeping variety, it was placed in a late Vinery, and I found out when it became ripe that it kept badly, besides which the bunches were soon disfigured with cracked berries. I always try any new Grapes by inarching them on established Vines, and if they be not promising after two or three years' growth I discard them, and this was the fate of the Madresfield Court in the Vinery in question. I have since tried it in an early Vinery inarched on the Black Tripoli, the roots of which are under control from being partly inside the house, and it has ripened in fine condition, and been cut without cracking along with Frontignans and Hamburghs in the same Vinery. The Chasselas Musqué, a highly-flavoured white Grape, when grown in pots or in borders inside the house where the roots could be kept dry when ripening, can be kept without cracking, but if planted out where the borders are outside, it is almost sure to show cracked berries.—William Tillery, *Welbeck.*

—— It is generally admitted that the Madresfield Court is a good Grape when well grown, but hardly two persons agree as to the cause of its cracking. I have had no experience of it as a forcing Grape, but it has ripened well here in the autumn, and has been entirely free from cracking during the past three seasons. As a late Grape, in the full meaning of that term—it is a failure; I cut the last bunch on December 17 last year in fair condition. Our border is entirely inside, and is made of very open material, with three layers of drain-pipes, each layer nearly covering the border from the drainage upwards; from this it will be seen that our border is full of air, and consequently always sweet. I prepared all our inside Vine borders after this manner three seasons ago, to the manifest improvement of the Vines. For the successful treatment of this Grape I should recommend the following:—(1) Have the roots entirely under control in a well-aërated border, giving abundance of water up to the colouring stage, discontinuing the supply only when the fruit has fairly commenced to colour; (2) An equable system of treatment from the commencement of forcing, never overcharging the atmosphere with humidity, and always regulating it according to the brightness or dulness of the weather—this will give the leaves, footstalks, and skins of the berries a firmness which they would not attain if grown in a high temperature and in a humid atmosphere; (3) Allow plenty of lateral growth, the effect of which will be to supply a sufficiency of work for the superabundant sap to form leaves and shoots, instead of creating a tendency to crack the fruit.—John Roberts, *Bolton Hall Gardens, Bedale.*

—— I cannot give this Grape so good a character as Mr. Smith bestows upon it (see p. 446). In pots it is all to be desired up to the period of ripening, after which it commences to crack badly. Among a collection of Lady Downes, Alicante, and Trebbiano in one of our late houses it ripens well, but its keeping qualities are not to be compared with those of the varieties enumerated.—R. Gilbert, *Burghley.*

FRUIT TREES FOR NORTH WALLS.

It is surprising that more attention is not paid to the planting of north walls, as many kinds of Plums, Pears, and Cherries succeed well on such an aspect, and in general bear more regular crops than trees on a south aspect. After a mild open winter, trees on the south sides of walls come early into flower, and the blossoms too often get destroyed by frost. Trees on the north sides of walls are as a rule late, in some seasons very late, as was the case last spring; and in consequence they stand a good chance of escaping injury from frost; moreover, in addition to the securing of a crop, there is also the advantage of prolonging the season of these particular fruits. On a north wall here there is a tree of the Jefferson Plum, and on a south wall there are two fine young healthy trees of the same variety. The tree on the north wall ordinarily produces double the quantity of fruit that the trees on the south wall do; this season the tree on the north wall had a heavy crop of fruit, some of which are at the present time (October 11) still on the tree, whilst the two trees on the south wall had very few fruit, though they were one sheet of blossoms last spring. Green Gage, Kirke's, Victoria, and other Plums I find are the same; they all suffer more or less on south walls by coming too early into flower. When the fruit is left to ripen properly on north walls, I find it equal in size and quality to that from trees on south walls. Cherries on south walls come early into bloom also, and often suffer from frost. Most kinds do well on north walls, and, if well protected by nets from birds, keep a long time. Many kinds of Pears, again, do well on north walls. As the present is a favourable time for planting, I would, says Mr. Saul, in the "Florist," strongly recommend those who have any vacant space on their north walls to plant it with Plums, Cherries, and Pears. Where the soil is strong and heavy, and the subsoil retentive, I would advise that the borders should be well drained, otherwise the trees will not do so well, for north borders, if of heavy, strong soil, are longer in drying than south borders, and if not well drained, the roots are liable to suffer from excess of moisture in winter.

Knight's Monarch Pear.—The premature ripening of this Pear is by no means uncommon. It is a variety which I find excellent in all respects when it ripens in its proper season, but that is seldom the case, as it is so liable to drop off the tree if not gathered earlier than many of the early kinds, and as a result the fruit shrivels and becomes prematurely ripe. It appears to be a variety that requires special conditions of soil and climate to bring it to perfection, and therefore it is not adapted for general cultivation.—James Groom, *Henham.*

—— This Pear is generally acknowledged to be one of our best varieties, but like many others, seasons, situations, and soils greatly influence its quality; in short, Knight's Monarch is one of the most uncertain Pears which we have, yet it is at all times a welcome fruit, as when not sufficiently melting for dessert, it is useful for stewing. Last season it was anything but melting, and it was very much shrivelled, not only here but in other counties. This season it is just the reverse. I had some on October 17 as ripe and melting as one could wish them to be, and with a flavour similar to that of a Bergamot. The whole crop, too, is fast becoming ripe; Seckle, Marie Louise, Napoleon, and Winter Nelis, were all ripe at the same time, and Beurré Diel, Chaumontel, and others, are coming in, a circumstance from which I anticipate a quick and short season for this year's Pear crop.—W. Divers, *Wierton, near Maidstone.*

Large Bunches of Grapes.—We have of late been accustomed to see mammoth bunches of Grapes, weighing 20 lb. and upwards, exhibited singly from year to year, but it is seldom that one grower has staged three bunches of the same variety at once, having a total weight of 45 lb. 6 oz. This was, however, done at the recent exhibition of the Royal Horticultural Society of Ireland by Mr. Roberts, gardener to the Earl of Charleville, who showed in the class for black Grapes three bunches of Gros Guillaume, weighing respectively 16 lb. 6 oz., 15 lb., and 14 lb. The berries were of fair average size, and the colour and bloom excellent. The variety was stated to be the true Gros Guillaume, and quite a distinct Grape from the Barbarossa, or Gros Guillaume usually met with in cultivation. Probably the Grape in question is identical with that known as the Seacliffe Black, a variety which I recently saw bearing very fine bunches at Heckfield, and which then presented features indicating distinctness from the Barbarossa, and certainly superior to it in size of berry. —A. D.

Out-door Grapes.—These have been a heavy crop this season, good in quality and fine in colour. The sorts to which I allude are Black Hamburgh, Esperione, Royal Muscadine or Chasselas de Fontainebleau, and Buckland Sweetwater. The last-named Grape I would recommend to be more generally planted in warm situations out-of-doors than it is, being superior to the Royal Muscadine, but not so early. These Grapes were all grown on south walls, on which I have also ripened Foster's White Seedling this year. Measurements taken of some of the berries were as follows:—Black Hamburgh, 3 in. in circumference; Esperione, 2½ in.; Royal Muscadine, 2¼ in.; and Buckland Sweetwater, 2¾ in.—W. Divers, *Wierton House, near Maidstone.*

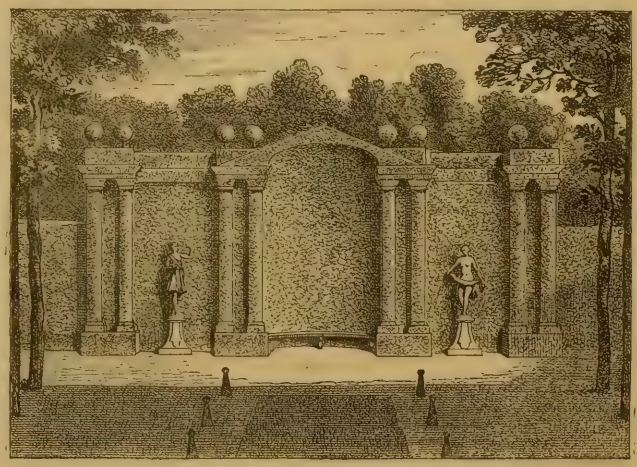
NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Muscat Grapes in Bottles of Water.—All our Muscat Grapes, consisting of 150 bunches, were cut and put into bottles of water on the 16th ult., after which I gave the Vines a thorough washing with the engine.—Richard Nisbet, *Aswarby Park.*

Pomegranates Fruiting in Oxfordshire.—It may be interesting to know that a Pomegranate tree trained to the wall of my house, facing south, after flowering freely this year has five Pomegranates upon it, which still remain on the tree although the leaves have fallen. The tree reaches to about 7 ft. on the wall with its highest shoot, and the largest Pomegranate measures 8½ in. in circumference. For the two summers that I have been here there has been no fruit upon the tree.—Henry Gebb, *Adderbury Vicarage.*

LESSONS OF THE PAST SEASON.

Vegetable crops appear to have made more progress during this autumn than at any other similar period within my recollection, for nothing could have been more unpromising than were our plantations of Winter Broccoli, Brussels Sprouts, Greens, &c., late in July, owing to the drought. It was nearly the 10th of August before the plants made a start at all; now the Broccoli plants, planted some 3 ft. asunder each way, are two much crowded, and they are nearly 5 ft. high; Brussels Sprouts not much less, and others of the Cabbage tribe in proportion. Seakale sown near the end of April was late in coming through the ground, and made such slow progress during the hot, dry weather that it was not fit to thin till the middle of July; but the plants now hide every inch of ground, and many of them are 5 ft. across, and quite equal in the crowns to the generality of two-year-old plants propagated from roots. The cause of all this rapid growth is no doubt the heat which the ground acquired during the hot weather, and the succeeding rains during August and September. Many cultivators defer planting their winter crops, if the weather be dry about midsummer, and wait for rain even if they should be late; but this is a mistake. Broccoli, Greens, Brussels Sprouts, Savoys, Cabbage, &c., seldom die, even though they are put in during the driest weather, and in dry ground. They will certainly not grow much, but they will root, and when the rains set in the pace at which they daily develop is wonderful. This is exactly what has taken place this season. Another lesson forced upon us by the experience of the late summer, is that it is perfectly useless to go by dates in sowing crops. Last year my winter quarter of Spinach was too late; this season it has almost gone to seed, though sown on the same date as last year; and it is the same with winter Turnips: second sowings will be found to succeed best. My experience with Carrots has been quite instructive. The main crop was sown at the end of March, after which, both in April and May, there was cold, ungenial weather—sleets, frosts, or snows, with little intermission—and the result was that not above a hundred Carrots ever came through the ground; but the second sowing, put in about the middle of June, was a success, the seed vegetating thickly in about ten days, though it came out of the same bags as the first sowing. Carrot seed is more sensitive than that of some other crops, and no doubt it had died in the ground in our case. It was very similar with Beet. The first sowing came very indifferently, but the second, sown in June, did well, and is now as forward as the April-sown crop generally is at this season. Peas have been fine crops, but the later-sown crops are more forward than usual; Wrinkled Marrows being all but over by Sept. 29. In ordinary seasons we find that a sowing once a month, after the 1st of March, of four or five sorts that follow each other in succession, furnishes continuous gatherings every day till well on in October; and we would rather, if anything, extend the time between the sowings than lessen it, as the overlap between one crop and another is sometimes too great. This season it would undoubtedly have been better to have sown the last crops at intervals of six weeks, for they nearly came in together. As a rule, when there is any doubt about the period of sowing, it is better to be guided by the appearance of earlier crops. In very cold March or April the seed will hardly move in four weeks, and when this is the case it is too soon to follow with the next sowing in a month. When the first crop is fairly through the ground and several inches high, the next sowing may then be commenced; but, making allowance for circumstances, it is not safe to delay sowing beyond this point. In Pea cropping it is, of course, a wise plan for every cultivator to note the kinds that suit his purpose best, and the order in which they follow each other. Between the earliest varieties and the latest there is a month or five weeks' difference, the early kinds requiring from twelve to fourteen weeks before the pods fill under ordinary circumstances, and the latest sorts nearly eighteen weeks. A month or five weeks' supply may therefore be had from one sowing when both Wrinkled and Round Peas are sown together, but after the 1st of April the great bulk of the crop usually consists of Wrinkled Marrows only, which reduces the period between the coming in of the earliest and latest rows to three weeks or a month. Potato crops have been tolerably good, though not so heavy as usual, and the disease has not been very destructive. Early lifting of the Potato will be found of immense advantage as a protection against disease, but the general apathy of farmers and cottagers in this respect is extraordinary, and their losses are consequently much greater than they need be. In getting up Potatoes for keeping or for seed, it is not necessary to wait till the leaves and stems are completely withered, as seems to be the impression with many people; in fact, for seed the tubers may be lifted while the stems are almost quite green and growing, provided they are spread out and greened in the open air. Many good cultivators prefer to save their seed in this way. With crops that have to be stored for general use the treatment is different; they must not be exposed to the light a moment longer than can be helped, but they should be got up as soon as the leaves and stems fairly begin to decay, by which time the tubers are nearly as ripe as they ever will be. In a season like the present, when the disease has kept off till the tubers are almost ripe; this is an important fact, which, if acted upon in time, would effect a saving in the crops.



Walls and Pillars of Clipped Trees.

Turning to fruit crops, the effects on the season are not so peculiarly marked. Trees were late in setting their fruit, and, notwithstanding the warm weather, the crops were as late as usual. One noticeable fact is worth recording. In many parts of Lancashire, Yorkshire, Derbyshire, and other parts of the country where the late frosts and cold winds were most felt—occurring as they did when the trees were in full flower—the Apple crops consisted chiefly of Keswick Codlin and Lord Suffield varieties. In many orchards these were the only kinds that were good, and in some cases all but these two failed. This speaks highly for the hardy character of these varieties, than which there are none better for kitchen use from July till November. In our own immediate locality,

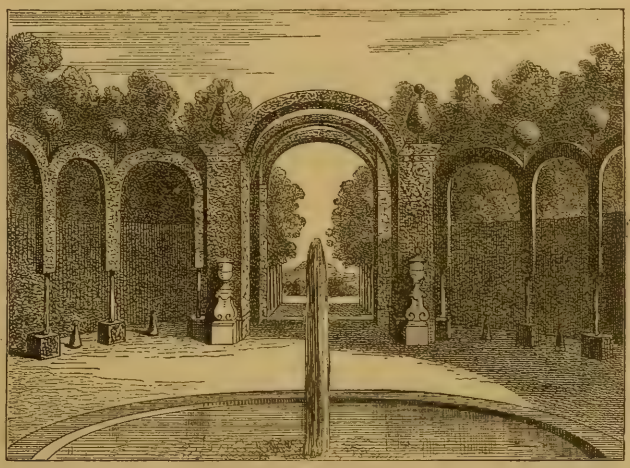
which suffered much from bad weather in April, May, and the early part of June, there was really no Apple crop worth mentioning save the Codlins and Lord Suffield. The latter is essentially the cottager's Apple; it is a certain bearer, and affords a great abundance of fruit that will either cook or preserve.

In the flower garden, as might have been expected, the beds and borders have been particularly bright and gay. With us the Violas have been most shabby since the end of July, while the Calceolarias have grown and flowered the best. I have before expressed my opinion that a sunny summer suited the Calceolaria best, provided it was reared in a hardy manner, planted out carefully and mulched, and this season's experience has certainly borne that opinion out. Not a diseased plant has been seen, and the growth of the plants and the profusion of their flowers eclipsed everything else in the way of bedding this season, though the plants were all but cut down to the ground by frost in April. Gladioli planted out at the usual time have been very poor, whether owing to the late spring or bad roots, I am unable to say. Roses were gay but short-lived at Midsummer, compensated for, however, by a good autumn bloom (and still continued), especially of Gloire de Dijon, La France, John Hopper, and similar kinds. Would some of your readers kindly relate their experience during the past autumn of the results of the vegetable, fruit, and flower crops in their districts?—"Field."

A People's Park has been acquired on a lease of ninety-nine years from Earl Dartmouth by the West Bromwich Commissioners, who are about to expend £2500 in laying it out, designs for which have been invited by them, and premiums of £20 and £30 offered for the best plans. What a foolish system is this of offering prizes for the best plans of gardens, to be competed for in all probability by persons wholly ignorant of the art of landscape gardening. The few men in the country who have shown evidence of good taste and knowledge in their work are surely those to whom application should be made in cases of this kind. The plan business in the case of public gardens is a miserable delusion, and the cause of much of the bad design to be seen in public gardens.

TREE SCULPTURE.

The accompanying illustrations show unusually good examples of the now happily almost lost art of tree sculpture. They represent scenes at the now deserted Marly, where in old times much attention appears to have been paid to this variety of geometrical gardening. No lover of trees or gardens will regret that this miserable practice is nearly discontinued. We have our walls, and pillars, and pyramids of verdure, but happily the branchlets that form them fear not the shears. However well these elaborate clippings may be made to look in engravings, the reality was, we fear, a sad sight. We may, indeed, see for ourselves in the few places where clipping and shearing are yet carried on how poor and disappointing is the effect. In the case of a very old garden, where this system was in fashion many years ago, it is permissible perhaps to carry on the old idea in our own time, but it is surely absurd to have a trace of it in any modern garden. Apart from the question of taste, or rather of our right to deform beautiful natural objects, there is to be considered the great amount of not unskilled labour necessary to carry out this absurd practice. If a number of lunatics were gifted with power to organize their efforts to some frivolous end, they could hardly occupy themselves with anything more absurd than clipping trees; and yet there are gardens in our own day in which this folly is carried out at great cost.



Verdant Entrance.

GRAVEYARD GARDENS.

Ironmongery, in the shape of railings and gates, ought always to be discarded, as a continual bill of expense is necessarily incurred in repairing; for the iron, if not painted every year or two, becomes rusted, and the frosts heave the posts out of the perpendicular, causing the gates to hang at all sorts of angles, and giving the whole affair a miserably dilapidated appearance. Granite posts set 4 ft. in the ground, with chains or bars of metal, without gates, are somewhat better, but not much so. Some people plant hedges of Arborvitæ, Yews, or other evergreen shrubs. These are in somewhat better taste, but they require yearly pruning and a large amount of attention to keep them looking trim and neat; and when this is not given them, they soon become ragged-looking. Having seen many of our leading cemeteries, and studied the effect of the various ways in which people treat their plots, a writer in "Harper's Bazaar" has long since arrived at the conclusion that all inclosures of plots are in bad taste, and should not be allowed by those having charge of the cemeteries. Such inclosures are mere impertinences, suggestive of selfishness and exclusiveness, and entirely out of place. They are also intrusions, as they mar the general beauty of many a quiet, peaceful nook, which otherwise would be in pleasant harmony with the peaceful repose of the dead. But it is not only for æsthetic reasons that they are to be condemned, especially hedges, for they largely prevent the orderly keeping which the homes of the dead should have, by harbouring weeds and interposing obstacles to the mowing of the Grass. Hedges also prevent the free circulation of the air, and so act injuriously on the Grass and flowers in the inclosure. If it be necessary to mark the boundaries of a plot, a small stone monument at each corner, about 6 in. square, and not projecting more than 6 in. above the ground, is all-sufficient for the purpose. Mounding up the graves is another objectionable practice, as it also interferes with the mowing of the Grass; and if the mound be planted with flowers, they suffer greatly in dry weather, especially from the shedding of the rain from the inclined sides of the mound. The plot, therefore, should be kept perfectly flat or level, and if flowers are to be planted, the turf should be cut out the size of the grave for their reception. Nevertheless, it must be admitted that the time-honoured mounds are dear to the popular heart, and that this sacred earth will not readily be levelled to the grade of the common soil, unless some device be adopted clearly to define the resting-place of the loved ones under the turf. The fashion of planting white flowers on graves arises from the same sickly sentimentalism which only allows white flowers, arranged in the conventional forms of harps, columns, crowns, crosses, and similar symbols, at funerals. It may be answered that white flowers are

emblematical of purity, but this is not the only attribute of the soul; but in the symbolism of colours as interpreted by the ancient Christians and the artists who decorated their churches, red was considered as indicating the divine love of the Saviour, white as indicating His divine wisdom and emanation from the Father, yellow as a revelation of His love in dying for us, and azure or blue as emblematical of His immortality and divine eternity; so that if we must adopt symbolism as a criterion of taste in such matters, flowers of other colours than white are in order in decorating the graves of the Christian dead.

Washington Irving has well said that "the grave should be surrounded with objects that might inspire tenderness and veneration." To produce such emotions, we think that there is nothing equal to trees. With a proper selection of these, a cemetery can be made a place of pleasing cheerfulness, instead of one of gloom and sadness. To lay our beloved dead in groves of beautiful, majestic trees is surely more expressive of tenderness and veneration toward them than the petty prettinesses of burying them in a flower garden. Hence we advise those of our readers who may have such mournful duties imposed upon them to plant a tree in their cemetery plot—not a Weeping Willow, as is too often done; for if considered as an emblem, it is more of an expression of the grief of the living than of their love for the dead. If weeping trees must be used, let them be such as are of some value, and will give rise to some more pleasant emotions than those of uncontrollable grief: such trees as the Weeping Birch, the Weeping Larch, the Weeping Elm, the Weeping Oak, the Weeping Linden, and others of similar character. But we would not confine ourselves to this class of trees alone, for there are many others of rare and curious aspect that would give our cemeteries an interest and character of which they are wofully deficient at present. Among deciduous trees of this class there is the Salisburia, the Copper-leaved Beech, Magnolias, the Cut-leaved Alder, the Virgilia, some of the smaller-growing varieties of the Elms, the Lindens, Mountain Ash, and very many others to be found in the catalogues of our more extensive nurseries. To these may be added a long list of choice and rare Evergreens. For an ordinary-sized plot one tree is quite sufficient, and that should be planted at the head of the plot, a little inside of its line, and not in the centre of the plot, as then it might interfere with future interments.

Preserving Walnuts for Winter Use (see p. 436).—Thrash the Walnuts from the trees when quite ripe (not before); separate them from the husks when they leave them freely without bruising; expose them to the sun to dry, then shake them in a bag or sack to rub off the fibre, &c.; repeat the shaking every time they become damp or mouldy, and hang them up in a basket in a cool, dry shed or cellar. I have practised this for many years, and several times have taken prizes in June and July at horticultural exhibitions for plump Nuts. I have also tried laying them in sand, sprinkling them with salt, and burying them in the garden in earthen jars, but nothing has answered so well as the treatment just recorded.—W. Divers, *Wierton, near Maidstone.*

Waterproofing Boots.—For this purpose take—Drying oil, 1 pint; yellow wax, 2 oz.; spirits of turpentine, 2 oz.; and Burgundy pitch, 1 oz., melted over a slow fire. With this composition rub the boots over at a distance from the fire as often as they become dry till they are fully saturated. The leather then is impervious to wet, and lasts much longer than it otherwise would. Thus runs the receipt. Now for my own experience with regard to it. Taking an old but strong and sound pair of boots, I used this preparation, only substituting common black pitch for the Burgundy (I have since tried the latter, but did not find it so good as the common sort). When the boots were dry, about three weeks or a month after they had received the dressing, I put them to a severe test by walking two miles out and home in a deep snow, and remaining on the trampled snow for two hours assisting in a pyrotechnical exhibition. On taking off my boots I found them quite dry inside and not the least trace of wet on my stockings. After wearing them two or three times they began to take the blacking, which they would not do at first; and with the moderate amount of wear they had to undergo I found that one dressing of the composition was quite sufficient for one season. Of the durability of boots so treated I have no doubt, but they should not be worn till the leather has become quite dry, which need not be more than three weeks if they are kept in a warm dry place. But the best way is to dress them in the summer and not put them on till winter has fairly set in.—B. S.

The Atlas Cedar in Scotland.—C. atlantica does well in the Edinburgh Botanic Garden, where the Cedar of Lebanon will not thrive. This is useful evidence in favour of the hardiness and value of the Atlas Cedar for cold and northern districts.—V.

THE KITCHEN GARDEN.

ENDIVE, ITS CULTURE AND VARIETIES.

In many gardens this ranks amongst the most important of Salad crops, and during the winter months in large establishments a considerable amount of space under glass is devoted to its culture, or rather protection. It is generally made use of in Salads, cut up with other ingredients, but it is sometimes eaten in the same manner as Lettuce. In order to have Endive in its highest state of perfection, liberal treatment is necessary, both as regards soil, manure, water, and timely attention to blanching. The first crop to be grown in the open air should not be sown earlier than the end of May, unless heads are needed earlier than sowings made at that time can afford. The evil attending early-sown Endive is that, as a rule, nine-tenths of the plants run to seed, and other sowings may be made at intervals of a fortnight up to the end of August. The seeds should at all times be sown on fine, rich, moist soil, and they may be either put in broadcast or in drills. Many adopt the latter method, and thin out the plants to the required distances apart, instead of transplanting them, as is generally done; and in the case of early crops a decided advantage is thereby gained, inasmuch as thus treated the plants are not so liable to run to seed as when subjected to transplantation. In any case the soil containing the plants should be kept in a moist state by means of frequent waterings through a fine rose, if the weather be dry; weeds should be promply eradicated as soon as they appear, and, in fact, all that is possible should be done to hasten the germination of the seed, and afterwards keep the plants in a healthy, growing state, thinning them out as they advance in growth until they are 3 in. or 4 in. apart, after which they should be allowed to remain until several leaves are made, when they may be carefully lifted from the seed-bed and transplanted on borders, or banks, or wherever they are intended to remain. The distance at which the plants are to stand apart must be determined by the variety grown and the time of year when transplanting takes place. Early and late crops do not require so much room as those that are fit for use in the middle of summer, inasmuch as the plants rarely attain such a large size as those having the warmest season of the year in which to complete their growth. The average distance, however, will be found to be about from 12 in. to 15 in. each way from plant to plant. It must, however, be remembered that the Balearian Endive always requires more room than the curled-leaved varieties. A warm, rich soil is essential to the growth of Endive, and in order to guard against mishaps in the time of drought, previous to planting the ground should be deeply dug, and well enriched with good rotten stable or cow manure. In very dry seasons copious waterings will be necessary, in order to keep the leaves in a quick-growing and, consequently, crisp and brittle state, which latter is most essential to flavour and general excellence. Weak manure-water occasionally applied to the roots, without wetting the foliage, will be found to greatly assist their growth.

Blanching, as in the case of Lettuces and Celery, is an important matter. Imperfectly blanched heads of Endive, however large they may be, are comparatively worthless. Blanching is generally done two or three weeks previous to the heads being required for use, but if, as should be the case, the plants be allowed to attain nearly their full size before blanching takes place, eight or ten weeks must elapse from the time of sowing before blanching is attempted. Many ways and means of blanching are resorted to by cultivators, the most common being that of laying the leaves together in the same way as in that of Lettuces; if tied in two places instead of one, as is often the case, *i.e.*, one in the middle, and one at the top, the blanching will be more complete than it otherwise would be. Some invert flower-pots of Seakale pans over the plants, which is, perhaps, the least troublesome method of any. Others cover the heads entirely with dry soil. Straw hurdles, too, put over the plants, in such a manner as to exclude light from them, is a very easy and effectual way of blanching, and by continually moving these onward, as the heads are cut, a successional supply of well-blanched Endive may be secured. No

more than is likely to be used should be blanched at a time, inasmuch as after a certain period flavour and crispness gradually decline. Flat tiles or slates are also sometimes used for blanching, first pressing down the hearts of the plants with the hand and then applying the tile or slate, afterwards covering the whole with earth or dry straw. Whatever process of blanching may be preferred, it should at all times be done when the foliage is dry, otherwise discoloured or rotten hearts will be the result. Taking all things into consideration, there is, perhaps, nothing better for blanching Endive than the common flower-pot, or seed-pans without holes in the bottom.

Plants from the latest sowings will seldom be off the ground before frost sets in, therefore if it be desirable to prolong the Endive season as much as possible, some means of protection must be provided. Many lift the roots and store them in sheds or cellars, planting them in dry earth and blanching the tops as may be required. The best way, however, is to have a pit or frame provided for them, choosing a bright day in October to lift the plants with as good a ball of earth adhering to the roots as possible, and plant them as far apart in the frame as is consistent with the space at command. The quality of the soil in which they are planted is not of great importance, considering that the plants will not grow much after they are put into the frames. It should, however, be within 12 in. or 18 in. of the glass, and after planting it should receive a good soaking of water to settle it well about the roots, leaving off the lights until the severity of the weather necessitates their being again put on. During very sharp frosts, a little litter or similar material placed over the glass will probably be necessary by way of protection. By blanching a portion of the plants at such a time as may be required, a good supply may be kept up till Christmas. Some allow their Endive to remain in the ground, covering it with spare lights, hand-glasses, or cloches during cold weather; others employ straw hurdles, mats, &c., but nothing equals putting it in a pit or frame. The ground rendered vacant by the removal of the plants can then be dug or ridged, and exposed to the pulverizing influence of the weather. Seed may also be sown in cold pits or frames in October, and when the plants are large enough to handle, be pricked out into other frames, on a bed of rich soil; from 6 in. to 8 in. apart will be far enough asunder for this crop, as the heads are never very large. Cover them up in frosty weather, and about the end of November the lights may be kept covered with litter or mats in order to exclude the light from the plants, which will then in a few weeks be fairly blanched, and though small will be found both crisp and good in flavour.

When Endive is in request early in spring, it is necessary to have recourse to artificial means whereby to obtain a succession to that stored away in cold pits, or otherwise wintered. Although Endive is seldom forced, it is, nevertheless, well worthy of the trouble which a little forcing entails. In many parts of France Salad-forcing is carried on to a large extent, and is considered to be a remunerative crop. The only drawback to early Endive, whether sown in frames or otherwise, is its liability to run to seed, owing to the length of time which the seed takes to germinate, and the plants to get fairly established. Speedy germination is therefore the principal thing to be aimed at, and in order to accomplish this, bottom-heat is absolutely necessary. Pits and frames are the best structures in which to force Endive, the former being, perhaps, the best when treated with hot-water pipes. Previous to sowing the seed a hot-bed should be made on which to place the frames—if frames be used. In the case of brick pits, they should be filled with fermenting stable manure to within 12 in. or 18 in. of the glass. The beds, when made should be slightly covered with rich mould, the lights placed on them, and when they are found to be sufficiently warm, the seed may be sown thinly and equally over the bed, afterwards making the whole firm by beating the surface with the back of a spade. No further covering is necessary until the plants are above ground, when a slight covering of light soil may be added. A warm, close atmosphere must be maintained until the plants are large enough to transplant, when they may be pricked off in frames or pits in which there is a lower temperature; keep the plants in a growing state, and afterwards treat them in the same manner as those grown out-of-doors.

There are two distinct types of Endive, one with narrow, curled leaves, the other with broad leaves like those of a Lettuce. The curled-leaved varieties are the handsomest looking, and are more easily blanched than the broad-leaved kind, which require tying in order to blanch them properly. The leaves of the latter are, however, more crisp and better flavoured than those of the former. Amongst the best of the curled-leaved kinds may be mentioned Digswell Prize, Williams' Gloria Mundi, large Green-curled, and French small Green-curled. These are all good sorts, on which reliance may be placed. The last-named is, however, only fit for early and late sowings. The best of the Batavian kinds are Fraser's improved (a fine hardy sort), green Batavian, Round-leaved Batavian, and the white Lettuce-leaved Batavian. The best way, perhaps, is to grow a number of varieties and select such as succeed the best.

Endive is grown to perfection in the London market gardens, and is ready for use from the middle of August till Christmas. Many growers keep up a supply of it during the winter and early spring by lifting the plants for winter use and planting them in a frame or amongst sand in a shed, and for spring use from late sowings planted out in dry and sheltered soil. As our markets, however, are so liberally and easily furnished with beautiful Endive from France during winter, it would not pay the English grower to cultivate them for the winter and early spring markets. The Green-curled and its dwarf variety are the two sorts most generally grown. In the middle of May a sowing is made either in a cold frame or a bed of light soil in the open air and covered with litter like Radishes. This early crop is commonly planted out on the Celery ridges about the middle or end of June, and becomes fit for use in August. Very early Endives are liable to "run" before they fill up; therefore, earlier sowings than those of May are not to be relied on. A large sowing is made in the open air in June, and another smaller one in July. The plants in the seed-bed are thinned out a little at an early stage if thick, and are transplanted permanently in rows about 15 in. apart and 1 ft. asunder in the rows, between Celery or between summer Cauliflowers, Lettuces, or Cabbages, or in an open field by themselves. Beyond hoeing no further care is bestowed on them until they have grown enough for tying up, when their leaves are gathered up together and tied round their middle with withies or pieces of matting, like Lettuces. They are kept tied up for a fortnight or three weeks in order that they may be well blanched for market. In October and November, in favourable seasons, Endives are very fine and abundant in our markets. S.

Potatoes—Early v. Late Varieties.—This has been an exceptional season for Potatoes—one in which we thought we had escaped the disease, and in fact, our early and second early varieties were lifted in sound condition; but the heavy rains in September started all the late varieties into a second growth, and the disease spread amongst them with more than ordinary rapidity, some varieties being nearly all affected. The old Rough Red, which is still largely grown as a field Potato, appears to be particularly liable to supertuberate, and therefore in a condition to suffer heavily. Some good, however, may result from the present disaster, inasmuch as growers will probably plant more largely of early and second early varieties, which are in every respect superior to late ones, and in the majority of seasons they escape with little loss from disease. If we cannot find a cure for the Potato blight, we should at least try to mitigate its effects by planting varieties that arrive at maturity as early as possible. There is no necessity for growth being kept up until Michaelmas.—James Groom, *Henham.*

Winter Lettuces.—Many persons fancy that unless a Lettuce is as big as one's head, and quite solid, it is not worth eating. This may be so with transplanted summer Lettuces, but at this season we manage to make a good salad from very young plants. We sow a quantity of seed in frames in lines, and allow the young plants to remain as they are sown, thinning out the largest as they are wanted, which allows those left always a little more room to grow. By spring those which are left get a considerable size, and furnish a large supply till the outside ones come into use. We sow large breadths at the end of September out-of-doors and in frames, but keep the lights off; and a pinch of seed now and then during October and November, dropped into other frames, or under hand-lights, or better still, in turf pits, ensures a liberal supply at all seasons. The young seed-

lings in the frames are very much more tender than those outside, and hence it is that they are all of use in the salad-bowl. The fact is, we do as we do with our winter Spinach and Onions—utilise every seedling, by sowing thickly, in the first place, and then pulling out those that are of any size first, and so on, until they are left to the proper width for the legitimate and larger supply. The lights should be always, in open weather, left off or tilted, so that no other covering is necessary in very cold weather but the light and frame, unless it be a few leaves scattered over the glass in very frosty weather.—"Florist."

Late Keeping Potatoes.—In his excellent article upon Potatoes (see p. 464) Mr. Hobday asks for a breed that shall have matured its growth at the end of July and yet be a good keeper. I fear that this is asking for an impossibility, for all experience shows that just in proportion to the time at which a plant is matured in one season so will it push its growth the next year. If a variety of the Potato be ripe early, it will necessarily push its young growth early, and where this is the case it is useless to attempt to convert them into late-keeping kinds. Because this year the latest sorts of Potatoes are severely diseased there is an outcry against late kinds, but it should be remembered that sometimes the earlier sorts are most affected, and that the late ones comparatively escape. So uncertain is the period at which the disease may appear that it is well to have crops coming in at intervals, as in this way it is possible to secure some sound and healthy. Further than this, there is the well-known practice of rotation of crops, and thus some sorts must be planted early and others late, just as the ground becomes vacant. All growers will plant as early as possible, that is, with safety, but one should judge as evenly as possible between the danger of late frosts on the one hand and the disease on the other. Late Potatoes, however, may as a rule be planted earlier than early kinds, as they do not so soon appear above ground, and are therefore not in danger of losing the haulm by late frosts. Still further, where there is a large quantity to be got in it will be found advantageous to utilise any open weather at the end of February and during March to get in the latest sorts and leave the most precocious kinds until April, when the weather will be warmer.—A. D.

New American Potatoes.—Two new kinds have been introduced this autumn, which will probably be extensively grown next year. Brownell's Superior, one of these, has already been noticed in the report of the International Potato Show as having received a certificate of merit. Of its haulm I know nothing, but the tubers so closely resemble those of Snowflake in form and smoothness that it might well be termed a Red Snowflake. The skin is of a rich reddish tint, rather deeper than that of Vermont Beauty, and it is a much handsomer Potato. Evidently it is not lacking in size, as I found a dozen tubers weighed 10 lb., and every one of them fit for the exhibition table. Its flesh, I may add, is as white as that of Snowflake. Success, the other kind to which I allude, is a white variety that can hardly claim to be any improvement on Snowflake, which it closely resembles, unless it is better in flavour. Its tubers are long, flat, and handsome, but it is not such a striking addition to existing kinds as Superior. Ruby, I think the only new American variety offered last year, has been severely tested by a hot, dry summer, and came out very well. It has a short haulm, much like that of Alpha, and ripens off early; the tubers are long, of a bright pinkish-red, and very handsome, in this respect quite excelling the Rose varieties, the colour of which is too pale to be acceptable. Ruby will be much in request as an early Red Kidney variety.—A. D.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Profits arising from Potato Culture.—On the light, loamy soils near York, Potato culture is found to be highly remunerative, the points of importance being deep cultivation, liberal use of artificial and other manures, and frequent changes of seed. A variety named "Yorkshire Mite" is now much sought after as seed by the Cornish cultivators, one of whom has obtained as much as £40 for the produce of an acre of this variety. Any return over £20 per acre, however, pays the cost of rent, labour, manure, carriage, and marketing, amounting to about £16 per acre. The sorts generally grown are York and Dunbar Regents, Dalmahoys, Scotch Roughs, and Patterson's Victoria.—B.

Jerusalem Artichokes.—A correspondent has drawn attention (see p. 465) to that valuable vegetable, the Jerusalem Artichoke, which is certainly too little regarded, but there is no doubt that further information upon its management would be very desirable. There is great waste in peeling Jerusalem Artichokes, which are very irregular in their form, and frequently thickly set with fibres proceeding from points and irregularities on the surface, but as they will not peel when boiled like Potatoes, and as they are very black when boiled without being completely pared, they are not well suited for cultivation by cottagers, although they are excellent in taste, and wholesome, nutritious, and agreeable as an article of food.—X. Y. Z.

Onions.—I find the Silver-skinned Tripoli variety called Queen to be a useful kind, which, if sown in July, is ready to be pulled late in the same year.—J. S.

PLATE XLVII.

DOUBLE-FLOWERED CHERRIES.

(WITH A COLOURED FIGURE OF THE DOUBLE-FLOWERED ST. JULIAN CHERRY).

By GEORGE GORDON, Author of the "Pinetum."

THESE rank among the most beautiful of hardy spring and early summer-flowering trees and shrubs, being loaded with flowers varying in colour from bright red to snowy whiteness; the flowers are generally produced upon small spurs from ½ in. to 2 in. in length, which arise mostly from the sides and ends of the two or three year or older branches, and like all double flowers, last much longer in perfection than single ones. Some writers combine the two genera Prunus and Cerasus, not considering them botanically distinct.

Double-flowered Saint Julian Cherry (Cerasus Juliana floribus-roseis).—This forms a tree from 20 ft. to 30 ft. high, with the branches ascending when young, and when in the adult state hardly spreading; the leaves are smooth and appear along with the flowers; the latter are semi-double, large, and of a pale rose colour when fully expanded, but of a deep red or crimson when in the bud state. It is a very handsome kind when in flower, and all the cultivated varieties named Geans in England, and those named Guignes in France, belong to it.

Common Double-flowered Cherry (C. Avium multiplex or C. capronianа multiplex, *De C.*).—This is the old double-blossomed Cherry of gardens; it forms a tolerably large tree, with rather a dense, roundish head, loaded in May with drooping, double white flowers. It is known in some parts of England as the double Carone Cherry. There are two double-flowered forms of this kind, one with semi-double flowers and the other with all the stamens changed into petals and the pistils into green leaves more curious than ornamental.

Double French Cherry (C. duracina fl.-pl.).—This forms a robust tree 30 ft. or 40 ft. high, which in May becomes loaded with festoons of large, drooping, snow-white flowers. It is the double form of the Bigarreau Cherry and the Merésier Renonculier of the French. This is the finest of all the double-blossomed Cherries, and resembles in every respect the common Bigarreau. The Cherry known under the name of Four-to-the-Pound, C. nicotianæfolia, macrophylla, Rhezi, ranunculifolia, and decumana, is only the single form of this kind, and distinguished principally by the very great size of its leaves and smallish single flowers.

Double-flowered Yung-To or Chinese Cherry (C. serrulata).—This forms a robust shrub or small tree 6 ft. or 8 ft. high, with stout, divaricate branches, having but few laterals. The leaves are moderately large, obovate, pointed, bristly serrulated, and quite smooth. The flowers, which are semi-double, are produced in bundles on the two or three-year-old branches; they are white when first they expand, but before they fade become tinged with pink. It is a very ornamental kind, and well suited for planting in the front of shrubberies. It flowers in April and is perfectly hardy.

Dwarf double-flowered Japan Cherry (Cerasus japonica multiplex).—This is a very handsome, neat, dwarf bush, from 2 ft. to 4 ft. high, with ovate, pointed, smooth shining leaves; the naked shoots are slender, of a purplish colour, and numerous; the flowers, which are pale blush, are produced in great profusion from March to May; the fruit is round and about the size of a Pea. It is a native of Japan, and as it flowers early is liable to get injured when planted in the open border; it is best planted against a south wall, where it forms a very beautiful object; there are the following varieties of this kind:—The dwarf, double white-flowered Japan Cherry, a kind rather more robust in habit and rather larger, and more double, the flowers being pure white. It is a very handsome and distinct variety, found in the north of China, but has its blossoms injured by the spring frost when planted in the open border. The double-flowered Chinese Cherry (Cerasus chinensis multiplex) also belongs to the Japan Cherry, and is the kind commonly known in collections as the Cerasus japonica multiplex, and in some old collections as Amygdalus pumila; the leaves are rather large, pale-coloured, somewhat wrinkled, and doubly and coarsely serrated; the flowers, which are pale red, are borne on rather longish foot-stalks. This variety differs in its weaker growth, and in having the young shoots of a light green colour. The plant, which is compact in its habit of growth, requires to be planted against a south wall.

Three-lobed Leaved Chinese Cherry (C. triloba).—This forms a low bush 3 ft. or 4 ft. high, and produces early in spring, before the leaves appear, fine, large, double, pale pink blossoms; the

THE LARGE ROSY DOUBLE CHERRY. (CERASUS JULIANA FLORIBUS ROSEIS.)

leaves are somewhat large, wrinkled, and of various shapes, some being broadly oval, with three acute lobes towards the apex, while others are oval, and free from any lobes, but they are all coarsely serrated on the edges, and bright green. It is a native of the north of China, and quite hardy, but suffers from the spring frost when in bloom and planted in the open border. It has been named Amygdalopsis Lindeyi by a French writer. It is a very beautiful shrub, but one which gets injured by the spring frost when in flower.

[The large and beautiful double Cherry now figured was sent to us in fine bloom last spring by Mr. George Paul, of Cheshunt.]

EXTRACTS FROM MY DIARY FOR SEVEN YEARS.

By W. DENNING.

November 20.—Cleaning among herbaceous plants. *Potting*—Masdevallia trochilus and gongora in Moss and fibry peat, also Ghent Azaleas for forcing; shifting large herbaceous Calceolarias in 24-in. pots; re-boxing Ivy. *Miscellaneous*—Putting cuttings from cold and damp pits on shelves in Vinery; planting out Guernsey Lilies under a warm wall, also Roses, manuring them and giving some of them fresh soil; planting thongs of Horseradish; putting some Cinerarias into slight heat, also Seakale, Asparagus, and Rhubarb; filling up empty frames with Lettuce from under wall; taking up more Schizostylis and Narcissi, also more Cauliflower; tying early Peach trees and top-dressing them after taking away some of the old soil, also one row of Endive under a wall; nailing wall Plum trees; putting Roses (Tea-scented sorts) into a cool Vinery; getting all Violets in pots into frames; covering up Globe Artichokes with straw; protecting seed Potatoes; laying all fresh-potted Roses out-of-doors on their sides and plunging them in straw; getting tan into pit for Gardenias; manuring outside border of first Peach-house; cleaning up Rose garden beds; keeping French Beans at 60° at night by means of fire-heat—ought not to be warmer.

Nov. 21.—Beginning to dig flower borders; planting Fig and Peach trees, Raspberry canes, and also Anemones, giving the latter manure and sand. *Miscellaneous*—Putting in Hyacinths, Tulips, Dielytra, and Lily of the Valley to force; putting young plants of Mrs. Pollock (in boxes) into French Bean-house; finishing all north-wall nailing; making a new Mushroom bed, not heating it more than just warm, very short and full of droppings, in medium state as to dryness.

Nov. 22.—*Potting*—some Azalea pontica; making a pit ready for forcing flowers, keeping it at 65° at night, and 70° by day, slightly syringing when necessary. *Miscellaneous*—Nailing Apple and Pear trees; putting hand-lights over Cauliflowers; looking over bedding Pelargoniums on wet days and cleaning them; sending in Crassane, Gansel's Bergamot, and Napoleon Pears; making second Mushroom bed ready for spawning; all Vines pruned now except late ones; shortening Rose shoots a little in order to keep wind from rocking the plants; running dirty water out of boilers; starting Peach-house at 45° on cold nights, 50° on warm ones, 55° by day fire-heat, 80° sun-heat, giving air gradually, and syringing three times a day.

Nov. 23.—*Sowing*—Mustard and Cress regularly; layering some Cucumber shoots in pots for early spring work. *Miscellaneous*—Finishing planting old bulbs out-of-doors; planting out February Cucumber plants; put in some Indian Azaleas to force for flowering by December 30; taking the Roman Hyacinths in flower out of heat; putting a little straw over Strawberry "walls" to keep off frost; syringing Gardenias with soap-suds once a fortnight; giving Asparagus just appearing some water and watering Rhubarb; beginning regularly to clean up leaves on borders, walks, and Grass; top-dressing Oranges and giving them some Standen's manure; warming some soil for last-spawned Mushroom-bed; pruning second Peach-house; stirring up the soil amongst frame Violets.

Nov. 24.—*Potting*—Miltonias in peat and Moss; also Lilies in peat and sand, and plunging them out-of-doors overhead in sand. *Planting out*—Sweet Williams and Wallflowers, taking them up with large balls, also climbing Devoniensis Roses in conservatory; taking up some Anne Boleyn and White Pinks for forcing and potting them; wall-tree nailing nearly finished, except Peaches and Apricots; gathering Beans from second sowing; taking up the last of the Cauliflowers from open border; sending in a little (the first) Asparagus; spreading out seed Potatoes in cellar to keep them from sprouting; giving Gardenias a top-dressing of turfy loam and Oak leaves; earthing up winter Cucumbers weekly, ½ in. at a time; training Creepers a little, and putting them in a fair way to intermix; pruning all Roses for forcing; stopping Cinerarias for spring show.

Nov. 25.—Digging borders and manuring highly for Roses; putting in second Seakale to force; wiring Wallflower beds to keep off rabbits; Neapolitan Violet border manured and fresh soiled with rich material; emptying another pit for Asparagus; examining Grapes and cutting out decaying berries; freeing cuttings from dead leaves.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Carnations in Pots.—A few more of these useful plants may be placed in a house or pit where a night temperature of 50° can be maintained; elevate them as near the roof as possible, and do not allow them to become dry at the roots so as to injure them, it being necessary to guard against this defect, particularly in the treatment of plants that are ranged on shelves over the paths where they are not immediately under the eye, and consequently their requirements are less likely to be noticed. Plants of these required for flowering later during the winter, should have their pots plunged up to their rims in coal ashes, in a frame or shallow pit, where they can be protected from frost.

Violets.—If a few of these that have been prepared during the summer be now lifted with balls of earth so as to disturb their roots but slightly, and transferred to 6-in. or 7-in. pots, they also should be accommodated in a frame, from which, if required, they can be removed to the greenhouse, or a dwelling-room where their fragrance will be appreciated. In all cases with plants of the above description that at this season are kept in frames, it is essential that they have abundance of air by removing the lights for a few hours on fine days, and tilting them when it is wet; if this precaution be not taken they will become drawn; aphides also increase much faster where there is an insufficiency of air admitted; dip or fumigate as soon as the presence of this pest is discovered. Those who have had but a trifling amount of experience in plant-growing, sometimes are under the impression that, at this dull season when so much less water is needed by plants in general, they will take little harm if only examined as to their requirements in this respect once or twice a week, but the whole should be thoroughly looked over every other day at least. The principle of giving a plant water to-day should never be adhered to on the supposition that it will need some to-morrow. Strong, vigorous-growing subjects may not succumb to such treatment, but any plant of a delicate nature is not likely to bear this kind of usage for long. Whatever water is required should always be given at the time air is admitted in the morning, by which means any that runs through the pots, or is unavoidably spilt, will have time to dry up before closing the house in the afternoon. This is an important matter, and one to which strict attention should be paid, inasmuch as plants suffer more from damp in winter than from frost.

Coleuses and Alternantheras.—Coleuses that are required for growing in pots or for bedding purposes will now need to be kept in a moderate heat. If there be a deficiency of room in the house or pit where such subjects are to be wintered, cuttings may be taken from any large plants that exist which will soon strike if covered with bell-glasses in a genial temperature; the old plants may then be thrown away. Alternantheras that have been struck from cuttings, or plants that have been taken up from the flower garden and potted, should be kept in a growing temperature of from 50° to 55° in the night and supplied with water as required. If maintained in a healthy state through the winter, they will furnish an abundance of cuttings in the spring.

Lily of the Valley.—This favourite plant is seldom really well managed out-of-doors in this country, except by those who grow it for sale. To the fact of its naturally hardy constitution, enabling it to exist in any out-of-the-way place with the least possible care and attention, may be attributed its frequent neglected condition. The Lily of the Valley has the character of enjoying partial shade, and through an impression that this is necessary the position chosen for it is often so near trees or shrubs, the roots of which impoverish the soil to such an extent as to prevent it from receiving more than a quarter of the nutriment necessary to enable it to form stout flowering crowns. Another source from which a weakly state arises is through the plantation of Lilies of the Valley being permitted to remain too long without removal until crowded together in a way that precludes the possibility of their attaining the requisite strength to produce healthy and vigorous blooms. The present is a good time for planting; choose a piece of good ground completely away from the influence of the roots of trees, dig it thoroughly 15 in. deep, working in plenty of rotten manure; if the soil be heavy, add 2 in. or 3 in. of sand or road grit. In removing the plants from the old bed it will be well to select those

with the strongest crowns for forcing this season, dividing the remainder of the strong from the weak, and planting them separately. Open shallow trenches 12 in. apart, allowing 6 in. between the crowns in the rows, cover with 2 in. of soil, on the surface place a mixture of rotten manure and leaf-mould, for although the plant (being a native of Britain) is necessarily quite hardy, yet in common with all those that are moved in autumn, it is better to protect the roots from severe frost. Some growers plant early in the spring, just before the Lily in question begins to grow, but after trying both plans I prefer the present season for that purpose. Strong crowns are essential to the production of fine flowers; to insure these plenty of water is necessary in dry weather whilst the leaves are green in summer. Keep them quite clean from weeds; the plants will increase fast, and in the course of two or three years, when the ground becomes too full, take up, thin out, and re-plant. For forcing always select the crowns with round, plump buds, as these only will bloom.

Flower Garden, &c.—There is naturally a feeling of reluctance to take up Dahlias until they are destroyed by frost. In some places they may have escaped the sharp nights we had at the commencement of the month; but where the tops were killed, if the roots be not already taken up, they should without further delay be lifted, otherwise they are liable to be injured. When top growth is suddenly arrested, as in its destruction by frost, the disposition still present in the roots to make growth is so strong that the latent eyes round the collar of the plants destined to make shoots the ensuing spring are often prematurely excited, in which case they necessarily perish, and frequently leave the tubers blind and worthless. Sever the top 10 in. or 12 in. above the collar of the plant, and then secure the label to each with wire. If only bast or twine be used for this purpose, the moisture from the stem frequently rots the ties, and the label then becomes lost, causing confusion at the time of propagation. There is another cause by which these roots frequently are rendered useless, viz., after the tops are severed and the tubers taken up the sap will often continue to exude from the stump of the stem that is left, running down and keep the whole in a damp state for weeks afterwards, which causes the crown of the root to which the tubers are joined to rot. This can best be avoided by placing the roots bottom upwards on a shelf or in a loft for some weeks after they are removed from the ground, thereby allowing the sap to escape, at the same time giving the whole an opportunity of drying.

Herbaceous Lobelias should now be taken up and placed either in pots or boxes as closely as the crowns can be got together, with a little drainage underneath, and just as much soil round the roots as will keep them moist; this will be found much better than heeling them in under stages in greenhouses or similar places, where they are too much in the dark, and receive an excess of water that drips from the plants above. These fine old, late, summer-flowering subjects are not nearly so much grown as they should be; they are easily managed, increase readily, take up but little room during the winter, and are particularly adapted for cultivation by amateurs; they will live through the winter anywhere out of the reach of frost.

Tritomas are not safe in the open ground from frost in many parts of the kingdom, and even in the most favoured localities; if it be desired to increase them they should be now taken up, the crowns divided, placed singly in small pots, and plunged in coal ashes in a frame where they can be so far protected as to keep the soil from being frozen; this latter precaution should always be taken, even in the case of plants that are quite hardy; when their roots are in a pot they suffer much more from frost than in the open ground: this at first sight may appear unaccountable, but the way it occurs is thus explained:—When the soil is confined within the restricted limits of a pot, it has not room to expand when frozen in the same way as when in an unconfined position, the result of which is that an inward compression takes place which crushes the roots within it; from this it will be seen that even the commonest plant should not be allowed to have the soil frozen about its roots when so placed.

Conservatory.

In order to insure thorough rest to roof-climbers, they should now be kept as dry at the root as the nature of the various plants with which they are associated will admit without causing them to flag or shed their leaves prematurely. In the case of such as are still growing and blooming, which some of them do more or less the whole year round, as, for instance, the beautiful Tacsonias Van Volxemi and exoniensis, the Habrothamnus elegans, and a few others of that character, it will be necessary to maintain the soil in a moderately moist condition, but not to the extent usual earlier in the season when growth is more active. With a view to admit as much light as possible into the house, all superfluous shoots of Passifloras, or others that have done flowering, should at once be cut away, and the paint and glass cleaned as opportunity offers. The unusual mildness of the autumn has tempted many to leave some of the more hardy stove or intermediate-house plants in the conservatory much beyond the usual time, and where any of these are still standing they should at once be removed to warmer quarters, for although they may not show immediate signs of suffering, they are sure to do so later on, unless such a temperature can be maintained as to suit their requirements. In no case, however, where there is a mixed collection of plants to be treated, and more especially if Camellias form a part, should the temperature of the conservatory range higher than from 40° to 45° till after the latter have done blooming, as a very little excitement at this season will cause them to cast their buds; or should they remain on and expand, the flowers are never anything like so fine, either in size or texture, as when they are allowed to come on naturally. Forcing Camellias now with a view to bring them on early is quite a mistake, and invariably ends in disappointment, as no plants are so impatient of artificial heat during the winter as they are; what forcing they are subjected to should always be given after they have shed their blooms—a time when they will bear and enjoy almost as much heat as any stove plant, if accompanied with a proportionate amount of atmospheric moisture. Another frequent cause of these shedding their buds is dryness at the roots, and should this occur often, it is as fatal as too much heat. The buds may remain on and appear all right till they ought to begin to swell rapidly, when, instead of that taking place, they shell out like ripe Filberts, to the surprise of those in charge. Where any doubt exists respecting the soil being in proper condition, an examination should at once be made by carefully breaking it up with a trowel or other implement as deep down as the roots are supposed to have penetrated. Borders in conservatories are often very deceptive from the frequent surface-dampings they receive in order to maintain a sufficiently humid atmosphere during the summer and early autumn months, a course which makes the top appear quite moist, while the bottom portion where the roots are may be dust-dry; a mere superficial examination never reveals this, so that plants frequently languish from a cause little suspected. It often occurs, too, that the air of the house in which Camellias are standing is drier than they like, and especially is this the case when the conservatory adjoins the mansion; or there is a continuance of frosty weather, necessitating the use of much fire-heat to keep up the proper temperature. A gentle bedewing over the heads of the plants will do much to counteract this without in any way overcharging the atmosphere of the house or rendering it too damp for any other subject that may be in bloom. Chrysanthemums will now be the principal flowers for the decoration of the conservatory, and in order to prolong their beauty, they should be placed where they can get plenty of air and be well supplied with water at the roots, taking care never at any time to allow them to approach anything like dryness, or the duration of the blooms will be very short. Late-flowering kinds, such as Nelly and others of that class, should be kept retarded as long as possible by giving them full exposure whenever the weather is favourable, by which means they may be had as late as Christmas, or even into the new year. Sericographis Ghiesbreghti will now be coming in, and if used in the conservatory should be placed at the warmest and driest end, where if not over-watered they will stand well and last in beauty for several months to come. For associating with the Sericographis to form groups, Libonia floribunda and L. penrhosiensis are admirably adapted, and being of an entirely distinct colour, although resembling each other so closely in the form of their flowers and general habit, they afford a most pleasing contrast. The trio are most charming plants for winter blooming, and well adapted for conservatory decoration. They all succeed and expand their flowers freely in a night temperature of about 45°, with a slight rise during the day, if the air of the house in which they are placed be kept moderately dry.

Forcing-houses.

In order to keep up a good supply of flowering plants, it will now be necessary to get in heat the first lot of Azaleas, making choice of those which are known to be early bloomers, such as Fielder's White, Pauline Mardner, and amœna, the latter of which, from its bright colour and free-flowering habit, is one of the most valuable for forcing. In selecting any of the above-named sorts, pick out those having the most prominent buds, and that were brought early into bloom last season, as they can be got in in much less time than others that were allowed to come on naturally. Plants that have once been forced acquire the habit of flowering early if properly treated after by giving the requisite heat and moisture to complete their growth, and get it properly matured before they are subjected to any exposure or suffer a check. Ghent Azaleas, Lilacs, Lily of the Valley, Spiræa,

Solomon's Seal, Dielytras, and similar subjects may be considerably forwarded by placing them in the Mushroom-house or any close shed where a little fermenting material can be introduced to afford the necessary warmth. Plants, like the above, may be forced much more economically in places of that kind during the first stage of their growth than they can in any glass structures, where there is a constant, rapid escape of heat through the laps of the glass and other crevices. In the Mushroom-house or ceiled shed, the temperature seldom varies more than a degree or two, and the atmosphere can always be kept regularly charged with moisture, so that forcing can go on without interference from any changes that may take place in the weather. Where there is a large demand for forced flowers, a close, ceiled shed, with a hot-water pipe running through it, and a bed of leaves and tan on the floor in which to plunge the pots, would form one of the most valuable places a cultivator could have, as all things of an herbaceous or deciduous nature might be helped forward by being placed therein till they pierced the soil or began to expand their buds so as to require light. The first-potted Hyacinths should now be examined, and if found to have pushed a little top-growth, and to have well filled their pots with roots, may now be got into heat; but before doing so place a tuft of Moss over each crown, or cover the same with a small flower-pot for a few days, that the sudden transition from dark to extreme light may be avoided, or the tips of the blanched leaves may suffer injury.

Flower Garden.

The exceptionally fine weather with which we were favoured all through October, and up till just recently, has greatly prolonged the season of summer bedding plants, many of which, especially those grown for the beauty of their foliage, have been as effective as at any season of the year. Such a summer and autumn has given additional proof of their great decorative value; and as many hardy and half-hardy plants can be used in arrangements of this kind, much may yet be done in rendering the flower garden, if not gay, at least interesting during the dull months of winter. There are now so many richly-variegated plants among the Euonymus, Hollies, Aucubas, Yews, Ivies, Thujas, Retinosporas, Vincas, &c., that can be used with other plain-leaved kinds so as to give beds quite a cheerful aspect, and when they get too large for that purpose they are even then of more value for planting in situations where they can remain as a permanency. In pleasure grounds and other positions away from the flower garden more frequent use should be made of subjects of a bold type of vegetation, such as Arundo donax, Bamboos, Aralia Sieboldi, and Pampas Grass; and for rich leaf colouring, Liquid-ambars, Ampelopsis, and some of the ornamental-leaved Vines that may be allowed to support themselves among the branches of any stunted trees where they can best display their beauty. Plants of the above character freely introduced would assist greatly in relieving the monotony that one so frequently sees in the arrangement of our trees and shrubs. Where it is contemplated to remove those of a deciduous nature with a view of re-arranging them, the transplanting should be proceeded with as soon as possible, in order to give them time to form fresh roots before severe frosts set in. To ensure their well-doing, thoroughly break up the ground that they may be able to ramify freely in it, and when planted cover the soil around the stem as far as the roots extend with a good mulching of littery manure, which will keep them in a uniform state as to warmth and moisture during the winter. It is not an uncommon occurrence to see such things as the Pampas Grass and Tritoma Uvaria with their leaves cut away after they have done blooming, but such a practice not only spoils the appearance of the plants till they make fresh growth, but leaves them quite at the mercy of the weather by robbing them of their natural protection. The leaves of the Pampas Grass, with their gracefully-recurving outline, are very pleasing and ornamental, even after they have assumed a tinge premonitory of decay. Although not strictly hardy if left to themselves intact, they will pass safely through any ordinary winter, so well has Nature adapted them to protect the most vital part by sheathing it with a thick covering that forms an admirable shelter from the wet and frost. The leaves then should not be interfered with in any way till the young growth begins to push through in the spring, when they are no longer needed, and may be removed. With plants of this character and others of doubtful hardiness, it is surprising how much protection a few dry fronds or fresh fallen leaves laid around their collars afford in severe winters, and as a precautionary measure it is always advisable to apply something of this kind before any injury takes place. Even a few Laurel or other evergreen branches stuck in often have the desired effect, and as they prevent any littery material that may be used from blowing about, and hide its objectionable appearance, they should always be made use of for that purpose.

Hardy Fernery.

Here, too, many plants are generally used that require some artificial means of protection, and nothing answers the purpose better than a few dry leaves kept in position as just suggested. With a covering of this kind in sheltered situations many half-hardy plants may be wintered with safety, and be made to add much to the charm and interest such places usually afford. Where bulbous-rooted subjects have been recently planted, much watchfulness will be required to see that they do not get disturbed by rats or mice, which soon discover them and often cause damage before it is observed.—J. Sheppard, *Woolverstone Park.*

Orchids.

In consequence of the increasing need of artificial heat more than usual vigilance will be required to look after and destroy such insects as attack, disfigure, and injure Orchids. Thrips, scale, &c., unlike the plants themselves, seem to thrive best in a close, unhealthy atmosphere; one of the best means, therefore, for keeping them in check is to maintain a sweet and healthy house. Thrips and red spider are not, as a rule, difficult to deal with; on the contrary, they may, by gentle and repeated fumigations, and cleansing the leaves with a sponge and water, be easily kept down, but the yellow thrips, an insect of comparatively recent introduction, is much more difficult to eradicate; indeed, so tenacious is it of life, that it often makes its re-appearance in houses which were supposed to be freed from it. All Orchid growers dread this insect; and those who have had experience of it can soon detect its presence by the rusty brown appearance exhibited by the leaves (particularly the middle ones) of the plant. Wherever it is discovered no pains should be spared to get rid of it; and even when the plants attacked by it are supposed to be clean, they, and indeed all the other plants in the house, should be put under strict supervision for a considerable time afterwards. It is well also to syringe the walls with Tobacco-water, for when driven from the plants it frequently lodges in the bricks and mortar. The best means to employ is to sponge often the plants affected with weak Tobacco-water, an operation which may be done without fear of injuring the plants. The softer kinds of scale may be removed by means of a sponge and water, and the small hard kind which infests Aërides, &c., by first sponging the plants over with water, to every quart of which has been added about 1½ oz. of soft soap; after sponging with this the plant should be allowed to remain undisturbed for a few hours, at the expiration of which the scale will become partially detached; it may then be rubbed off with a sponge and clean water. Care must be taken in cleaning a shrivelled plant, for if rubbed hard or pressed when in that condition, the leaves will be permanently injured. The larger kinds of insect-pests in Orchid-houses—viz., woodlice, cockroaches, crickets, &c.—are not difficult to keep down; their presence in any quantity is more frequently due to neglect than to anything else. Rubbish, empty pots, &c., should never be allowed to accumulate in the house, or they will not be slow to avail themselves of the protection thus offered, and will be proportionately troublesome. Cockroaches are particularly voracious, and by eating off the tender points of the roots diminish the vigour of the plants, and often prevent even strong specimens from flowering. Beetle poison, of which two or three excellent kinds are to be obtained, is much the best means to employ to get rid of them.—James O'Brien.

Roses.

Where ground has been prepared, select as early as possible plants to form new beds and to make up blanks in last season's plantations. In the case of worn-out beds, remove their contents, trench the ground, working into it some good loam and rotten manure, and then start afresh with young plants. In planting, thoroughly spread out the roots, well working the soil in between their fibres, and where the soil is naturally heavy use plants on the Brier, which always do best in such soils; and, especially if the ground be wet, place some fine garden soil over the roots. Standard and other Roses on lawns may now be manured, or have a little fresh loam added, so as to strengthen them and improve the blooms, this being the best time of year to remove the turf for that purpose. If near large trees, this operation ought to be done every year, as the tree roots rob the Roses of their food; and, in order to keep them as much as possible from doing this, run a spade in a circle round the Rose tree—say 3 ft. from the stem—so as to cut off all the tree roots, and thus prevent them from coming into contact with any fresh Rose soil that may be applied in the way just indicated. When all inert soil has been removed, and new material added, re-lay the turf, leaving it a little above the level of the lawn, so as to allow for subsidence, which time and a little treading and beating will effect. Dig in also loam and rotten cow manure into Rose beds with a steel fork. In the course of the operation remove all suckers.—H. G.

Kitchen Garden.

The storing of roots should by this time have been completed, at least of such as are not able to pass through the winter without becoming injured. The following kinds will be found to be the best if left in the ground and lifted as wanted, viz., Parsnips, Jerusalem Artichokes, Salsafy, Scozonera, and Horseradish; it may, however, be wise to dig up a temporary supply and layer in sand, to be used in case of a long-continued frost, when such roots can only be taken from the open ground with difficulty. Some Celery should also be secured in a somewhat similar manner, and it will now be necessary to earth up all of it in the ground as high as possible, as this is the best mode of protection, though a mulching of Bracken or litter assists in a great measure to ward off the pernicious effects of frost; but such protection should be removed as soon as the weather breaks, for more injury will be sure to accrue from damp than from frost. Even in the favourable climate of this part of the country Globe Artichokes will not winter well unless protected, which operation should be effected by placing round each crown about 1 ft. in thickness of dry ashes, tan, leaves, or litter. Provision should also be made for a supply of salading—Parsley and Herbs, in case of snow or frost, by means of frames, hand-lights, or hurdles. Lettuce and Endive should be tied up in fine weather and lifted with good balls of earth and moved into any position that is free from frost, such as an orchard-house, Peach-house, or cold pit. The supply of Herbs and Mustard and Cress should be kept up by planting and sowing in pots or boxes weekly or fortnightly, according to requirements. Apples being this season somewhat scarce, Rhubarb is very likely to be in great request, and provision should accordingly be made to meet the demand by forcing an extra quantity. At this early season it is better to lift the roots than to attempt to force them on the ground, and any warm shed, cellar, or Mushroom-house may be made available for the purpose. Ashes, old tan, or sand answer equally well as soil in which to plant it, *i.e.*—if the roots be lifted with plenty of soil adhering. Seakale may be forced in the same manner, but this should be kept quite dark, or the produce will be green, astringent, and bitter. It is yet early to begin forcing Asparagus, and but indifferent results will be gained by starting so soon, but if in request, the following is a good plan to adopt:—A bed of leaves (Oak, if obtainable) should be made up in the forcing pit, or, if no such structure be at command, on the floor of a Vinery where forcing is commencing. Place the roots on about 4 in. of soil, and cover to the same depth, and where water is required let it be of a temperature of 80°. The Oak leaves retain heat so long that I have known three different batches of Asparagus forced on the same bed. Take advantage of frosty mornings to wheel manure and soil to the various quarters in need of such material. Asparagus beds may also be soiled and manured; indeed, everything that is to be moved should then be wheeled into its required position, for such labour is always more expeditiously completed in such weather, besides the saving of the walks. Lose no opportunity of stirring-up and turning all vacant ground that the frost may the better act upon it; also let all draining, walk-making, and repairing, be proceeded with at the present comparatively slack period of the year, much unnecessary labour being saved by doing everything at the right time.—W. Wildsmith, *Heckfield*.

Japanese Monkshood (Aconitum japonicum).—This Monkshood ranks as one of our very best late-blooming, herbaceous plants, and it should be extensively grown in all gardens where autumn flowers are wanted, for it comes into bloom about the middle of September in Scotland—it may be earlier, of course, in the south—and continues to blossom till near the end of October. As a Monkshood, it is most distinct from others. When well cultivated it grows to the height of 4 ft. Its habit is stiff and erect, so much so that it scarcely requires staking. It throws up bold stiff spikes of large, very deep blue flowers of great substance, which withstand autumn damp and rains well, and last in perfection a long time. Its leaves are thick and palmate, of a dark shining green. For alternating in rows with Tritoma Uvaria, to which in colour and style it forms a complete contrast, it will be most effective. While speaking of this Aconite I would also recommend A. lycoctonum as a very striking and distinct plant: in good soil it grows 5 ft. to 6 ft. high, and produces large branching spikes of bright sulphur-yellow flowers in great profusion in July and August. For alternating in back lines with the blue Delphiniums it is very effective.—"The Gardener."

Burying Apples.—Inquiry is sometimes made as to the merits of the practice of burying Apples to keep during the winter. If the proper conditions be observed it does well, and in districts where the crop is larger than the cellars of the owners, it may be profitably resorted to. The first requisite (according to the Albany "Country Gentleman") is to select only good keeping Apples that usually last through the winter. Secondly, choose a very dry piece of ground, where there is a natural drainage, so much the better if under the shelter of evergreen trees. Instead of placing the Apples on the bare ground, first lay a thin stratum of stiff Rye-straw corn husks, or soft evergreen branches, which will keep the fruit comparatively dry, without excluding the warmth from below. On this stratum place the heap of Apples, and then cover them with plenty of straw, which will be 8 in. or 10 in. thick when packed; 3 in. of earth outside of this will protect them from freezing. Turf makes an excellent covering, and 6 in. of dry forest leaves in the place of straw will answer admirably. Apples do not need so much protection as Potatoes. There should be a ventilating hole at top, filled loosely with straw, or the heated air there collected will make many rotten Apples at the apex of the heap.

NEW PLANTS, &c.

Laurentia carnosula.—A slender-habited Californian Lobeliad found in muddy places in the Sierra and Indiana valleys, and thence northward to the Wyoming territory. It has been raised from Californian seed by Mr. W. Thompson, of Ipswich. It is a straggling annual, having procumbent stems 1 ft. long, the purplish-blue Lobelia-like flowers being borne in terminal spikes. It forms a pretty plant for moist rockwork.—"Botanical Magazine," t. 6257.

Masdevallia polysticta.—A pretty little species, bearing five to seven white purple-spotted flowers on a spike a little longer than the bright green leathery leaves, the whole plant being about 6 in. in height. It is a native of North Peru, and has flowered with Mr. Green, of Reigate, and with other growers; it is, however, generally met with in gardens under the name of M. melanopus. Although not showy it deserves culture in all good collections.—"Botanical Magazine," t. 6258.

Calliphruria Hartwegiana.—A pretty, white-flowered Amaryllid, nearly related to Eucharis and Eurycles, but smaller in all its parts. It is a native of New Granada, whence it has quite recently been imported by Mr. W. Bull, with whom it first flowered in July, 1874. The flowers are borne six or eight together on a slender, glaucous scape, 18 in. in height, and are creamy-white in colour, rarely exceeding 1 in. in diameter. The deep green leaves are lance-shaped, shorter than the scape.—"Botanical Magazine," t. 6259.

Dendrobium bigibbum superbum.—A distinct and bright-coloured form of the Australian double-spurred Dendrobe recently imported by Messrs. Veitch & Sons, who have received a first-class certificate for it from the Royal Horticultural Society. The petals are like those of a Phalænopsis in form, and of a bright lilac-purple colour, the lip being rich amethyst-purple. It is distinct, and well deserves culture.—"Floral Magazine," t. 229.

Hibiscus Denisoni.—A robust-growing variety introduced by Mr. B. S. Williams from Australian gardens. It has leathery, dark green leaves, and bears creamy-white, vasiform flowers 4 in. in diameter. It flowers freely in a small state, and promises to be a useful, decorative, warm greenhouse shrub.—"Floral Magazine," t. 232.

Lilium neilgherrense.—This is one of the most noble of all the Lilies of which L. longifolium is the type; it has recently flowered in several collections near London. A fine specimen of it was recently exhibited at South Kensington by Mr. G. F. Wilson, of Heatherbank, and to which a first-class certificate was awarded. The flowers are trumpet-shaped, fully 9 in. in length, the gracefully-shaped, reflexed segments being of great substance, and of a soft creamy-yellow tint. The plant varies from 2 ft. to 4 ft. in height, its blossoms being delicately perfumed, and it undoubtedly deserves culture as one of the most noble of all the autumn-flowering Lilies.

Agapanthus umbellatus fl.-pl.—This has recently flowered in Mr. B. S. Williams's Nursery at Holloway. It is similar in habit to the typical species so long grown in our gardens, and which, although a native of Southern Africa, is nearly hardy. The present plant is a very distinct and acceptable addition to the varieties already known. Two distinct forms of the bright blue-flowered type are grown at Kew, and there is a white-flowered kind which deserves to be more often seen in cultivation than it is. Treated as subaquatics, they form effective plants for grouping along with other graceful vegetation either in a cool greenhouse, or by water margins in the open air during the summer months. The delicate blue buds and flowers remain fresh for a long time after being cut, and are beautiful grouped in bouquets along with scarlet and white Bouvardias, Stephanotis, Gardenias, Heliotropes, and Maiden-hair Ferns.—"Floral Magazine," t. 230.

TREES AND SHRUBS.

SWISS STONE PINE.

(PINUS CEMBRA.)

THIS forms an erect tree, of a bluntish-pyramidal shape, regularly furnished with branches down to near the ground, thickly clothed with foliage, and attaining a height of 50 ft. Its timber is very soft, but very fine in the grain; fragrant and resinous. This tree is found in the highest regions of the Alps, from the Tyrol to Mount Cenis, between 4000 ft. and 6500 ft. of elevation. It is also found on the northern slope of the Alps, from Austria to Savoy and Dauphiné, and occurs on the Carpathian Mountains, and on the Altai. It is the "Aphernousli" Pine of the Tyrolese, the "Aralla" of Savoy, and the "Arth" of Northern Italy and the Bernese Oberland mountaineers. The Russian "Kedrovoi" has probably been misapplied to this tree, as the Cedar is nowhere indigenous to Russia, and, therefore, could not have an original Sclavonic designation. The varieties, according to Gordon, are:—The One-leaved Cembra Pine (Pinus Cembra monophylla), a singular variety of the Siberian Stone Pine, but with much slenderer branchlets than the type, and the leaves so compressed, or adhering together along their whole length in each sheath or set, as to appear but one leaf. The Siberian Stone Pine (P. C. sibirica), a kind with leaves in fives, much shorter, more dense, and of a brighter green than those of the Swiss variety, with the cones longer, but not so broad, and a tree of much slower growth; but according to Pallas a lofty tree destitute of branches a considerable way up the trunk, and which sometimes attains a height of 100 ft., but is never found beyond the river Lena in Eastern Siberia. Seeds large, and eatable in Siberia. The Dwarf Cembra Pine (P. C. pygmæa), a very dwarf variety, seldom growing more than 2 ft. or 3 ft. high, with a scrubby appearance, and at times assuming a creeping form on the ground, with the leaves very much shorter and more crowded. Cones extremely small, nearly round, and bright purple when full grown. Scales very small, thin, rather recurved and pointed. Seeds wingless, and very small of their kind. It is found in Eastern Siberia, covering rocks where no other vegetation grows, and in valleys, where it grows much stronger, but never attains the size of a small tree. It grows on the eastern slope of the Ural Mountains towards the Lena, where it is called the Elastic Stone Pine, or Spreading Cedar of Eastern Siberia, and has several stems, sometimes 12 ft. long and 3 in. in diameter; erect in summer, but completely prostrated by the snow in winter. The cones are but half the size of those of the Swiss kinds, but the nuts are equally good flavoured. The Variegated Cembra Pine (P. C. variegata) is a very ornamental variety, with an equal portion of its leaves of a pale straw colour.

The Swiss Stone Pine (Pinus Cembra).

PINUS TUBERCULATA AND ITS CONES.

AT a recent meeting of the San Francisco Microscopical Society, Mr. J. P. Moore presented some transverse and longitudinal sections of Cones of this Pine, accompanied by the following interesting paper:—In a recent visit to the Sierras, I had an opportunity to make a study of some of the peculiarities of this Pine. It cannot be said to be a common tree, in the ordinary acceptance of that term. It is mainly confined to the Sierras, and at an elevation of about 3000 ft. It seems to prefer the southern slope of the mountain, where the soil is very dry, and where it can be fully exposed to the sun It can be readily distinguished by the fact that, unlike other Pines, it bears its cones on the main trunk of the tree, giving it a singular appearance, as they are arranged around the trunk in almost a circle. Usually, five, though often seven, cones compose the circle. Sometimes two or three of these circles of cones will be closely crowded together, overlapping each other as they hang down. A peculiar feature of these cones, and one worthy of attention, is the manner of their attachment to the trunk. It may be observed that the bases of the cones rest against the bark, and that they are so firmly fixed as to bear the pressure of several hundred pounds without breaking off. These cones appear upon the trunk while yet the tree is quite young, and yet the successive layers of growth of the trunk rarely ever surround and bury them. The petiole of the cone seems to lengthen, but not quite fast enough to keep pace with the growth of the trunk, so that in many instances it would seem as if the pressure of the subjacent tissue against the base of the cone had forced it out, leaving a hole where the petiole entered the older wood. Nature has also made good provision for the preservation of the seed. The cones are very compact, and covered with a resinous coating, which insures them against cracking. The cones are never shed until the tree dies or has been felled, and even then they do not open for a long time. In the forests where this Pine abounds the trees are all of the same age. This may readily be accounted for by its cone shedding. P. tuberculata has no special value as a tree

of commerce, but it finds, or should find, a place as an ornamental tree.

MEASUREMENTS OF CONIFERS.

In The Garden (see p. 424) are given some measurements of Conifers at Mell's Park. The following are the measurements of a few of the specimens which we have here, together with the dates of planting, which will show what progress they have made:—

Name.	Height.	Dia.	Bole.	When planted.
	ft. in.	ft. in.	ft. in.	
Abies Albertiana	43 0	25 0	3 0	
——— Douglasi	49 0	45 0	8 6	
——— ——— taxifolia	57 3	34 0		1855
Cedrus Deodara	49 0			1851
Cryptomeria japonica	50 0			
——— ——— Lobbi	49 0			
——— ———	34 0	24 0		
Cupressus Goveniana	50 8		7 6	1855
——— ——— Lawsoniana	27 0	11 0		1858
——— ——— ———	28 6	13 0		
——— ——— macrocarpa	56 6			1851
Picea nobilis	42 6	30 0	6 7	1856
——— ———	38 6	28 6	8 0	1854
——— Nordmanniana	37 0	24 0	7 0	1854
——— grandis	48 10	26 6	7 0	1855
Pinus insignis	73 6		9 8	
——— ———	62 0		10 6	
——— ———			11 7	1851
——— ———	62 0	38 0	9 0	1855
Thuja gigantea	21 6		3 6	1858
——— Lobbi	49 0	16 0	5 7	1857
Thujopsis borealis	29 0	19 6	4 3	1854
——— ——— dolabrata	11 6	10 3		1852
——— ——— variegata	11 0			1864
Wellingtonia gigantea	30 0		8 0	1855
——— ———	36 0			1855
A Seedling C. Lambertiana	26 6			

We have quantities of seedlings of Cupressus Lambertiana, from seed gathered here, handsome trees between 20 ft. and 30 ft. in height, and no two of them are alike, some of them being totally distinct from the parent. The newer kinds of Coniferæ which we have planted are making good specimens, and in a few years will equal, if not surpass, any in this country. Wm. Nanscawen.
Coldrenick, Menheniot.

The Californian Redwood (Taxodium sempervirens).—A noble example of this Conifer is growing in the pleasure grounds at Longleat, the measurements of which, taken a few days ago, are as follows:—Height, 63 ft.; girth at 1 ft. above the ground, 9 ft. 6 in.; at 3 ft. above the ground, 8 ft. This beautiful specimen is perfectly furnished with branches from base to top, forming a dense pyramid of foliage. From inquiries I find it was planted only eighteen years ago when about 4 ft. high, thus proving that it has made an annual increase of more than 3 ft. I may mention that it is growing in a deep vegetable deposit, resting on the Oxford clay. There is also thriving near this tree a fine specimen of Abies Menziesi, 56 ft. high.—G. B., *Longleat.*

Pterostyrax hispidum.—In a recent number of the "Revue Horticole," M. E. A. Carrière mentions, and also illustrates by well-executed woodcuts, the flowering and seeding of this handsome, hardy, deciduous Japanese shrub during the summer and autumn of this year in the gardens of the well-known nurserymen, Messrs. Thibaut and Keteleer, at Sceaux, near Paris. This shrub had produced its handsome corymbose racemes of Deutzia-like white flowers in the same gardens in 1875, but had not produced any seed, and it is only now that seed-pods have been furnished, that the name of hispidum, under which it was received from Japan, is explained, as the pods are covered with conspicuous white hairs.—W. E. G.

Spiræa prunifolia in Autumn.—We have been trying to think, for a week or so past, to call our readers' attention to the foliage of Spiræa prunifolia. It is not too late. The glossiness which characterizes its leaves while they are green still continues now they are red, having changed from green to their present colour through several distinct and pleasing shades. As we have noticed the autumn tints of many trees and shrubs of the woods, fields, and gardens about us, there is not one other, it seems to us, that changes so beautifully, so brightly, and yet holds its foliage so persistently. Now, indeed (October 20), most of the leaves of other plants have fallen, while for the most part those that remain have faded to the colour of fallen rather than of autumn leaves. In a garden 500 ft. distant, we see among the shrubs only this, so striking is its foliage among the half-leafless branches of those about it. The beauties of autumn leaves have been well sung; but while the Oak, Maple, Liquidambar, Tulip Tree, Sumach, &c., have constituted the subjects of those songs, S. prunifolia we have never seen mentioned, though it is as an autumn plant the brightest and most enduring of them all.—"Rural New Yorker."

Large Pinus insignis.—A fine tree of this Pine in the grounds here recently measured was found to be 76 ft. high; its girth at 3 ft. from the ground was 10 ft. 6 in., and the circumference round the branches, 177 ft. Several of its limbs, 1 ft. from the trunk, measured from 30 in. to 40 in. in circumference. This Pine is well furnished all through with branches, those at the bottom resting on the ground. It is believed to be about thirty-three years old. There are two other fine specimens of P. insignis in the Pinetum here, and although much younger than the above they are nearly equal to it in height, and promise to become even finer trees. Are there larger specimens than these anywhere in the country?—F. Kelly, *Mount Shannon, Limerick.*

Cedrus Deodara bearing Cones.—Several trees of this Cedar have produced cones in abundance here this season; on one tree in particular they might be counted by thousands, and when borne thus thickly they give the trees a pretty appearance. They are produced principally on the old wood, but I have noticed a few on wood formed last year, and these only a few inches from the points of the branches. The largest cones measure about 2½ in. in length, and the trees that bear them range from about 35 ft. to 40 ft. in height. I do not know whether or not Cedrus atlantica has produced cones in this country before this season, but a tree in the Pinetum here now bears a good crop. They are exactly like those of C. Deodara, and are borne as they are on the upper sides of the branches, on which they stand upright. The specimen now bearing cones is about 40 ft. in height.—F. Kelly, *Mount Shannon, Limerick.*

Heart-rot or Dry-rot in Larch.—The outward indications of fully-established heart-rot are, the tree becoming perceptibly thickened under about 2 ft. from its base; the bark of both stem and branches assuming an unhealthy, dried, and more or less Moss or Lichen-covered appearance—the length and abundance of such covering being in proportion to the atmospheric dampness of the situation; and the stunted, decreasing growth of the annual shoots and foliage till the tree first becomes partly, and ultimately wholly dead. When cut down the internal appearances are—first, unhealthy, darkish discolourations of portions of the red or heart-wood, which spread and change to dry rottenness, followed by hollow-heartedness, and finally by total decay; the decrease in the width of the annual wood-layers being proportionate to the increase of rottenness, till arrested by death. These symptoms occur at all ages, but are most frequent between ten and thirty-five to forty years, and are attributable to occasional droughts, as well as occasional over-saturation, to fungoid attacks on the roots, such as emanate from decaying remains in ground previously occupied by Scotch Fir, and to lopping off or otherwise destroying the roots—in fact, to anything that thoroughly checks or materially weakens the root action. The correctness of these remarks being assumed, it follows that the only prevention of dry-rot is to avoid planting Larch in places likely to produce it. The only remedial measures that can be adopted—for cure there is none—are cutting down the trees when it first appears and re-planting the ground with other more suitable kinds.—William Gorrie.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Umbrella Pine (Sciadopitys verticillata).—We have here a plant of this Pine which measures 11 ft. 4 in. in height and 9 ft. 1 in. through the branches. It forms a handsome evergreen tree, which in Japan is said to reach from 80 ft. to 120 ft. in height.—G. M. B., *Bagshot.*

Sucker-flowering of the Lilac.—According to a certain Dr. Beaupré (cited in the "Journal de la Société Centrale d'Horticulture de France"), a Lilac after flowering profusely, as it does every year, this season threw up two or three suckers, which bore enormous trusses of flowers, although they only appeared between 2 in. and 3 in. above the surface of the ground.

Pittosporum Colensoi.—This beautiful New Zealand evergreen shrub, with wavy-margined leaves and graceful conical habit, thrives in the open air at Edinburgh. There is a specimen of it, about 10 ft. high, in Mr. I. Anderson Henry's garden in a sheltered position. Such shrubs should be more frequently grown in the milder districts, where we too often only see kinds that may be cultivated anywhere.—V.

The Dwarf Fan Palm Hardy in Scotland.—Although numerous notes recording the progress of the hardy Chinese Palms in England have been published, the important fact that the Fan Palm (Chamærops humilis) thrives in the open air in the Edinburgh Botanic Garden is not sufficiently known. A healthy specimen there has been forty-five years planted out in the open air From this there can be little doubt that it would grow well in the south of England on warm soils, and it might be very effectively used either on banks, on bold rockwork, or isolated as a tuft on the Grass as in the Edinburgh Garden.—V.

ARE INSECTS A MATERIAL AID IN FERTILIZATION? *

THERE has been such accord in publications on this point lately, that we are pleased to notice that Mr. Thomas Meehan has given expression to what we fancy many cultivators already feel, that a good deal too much has been claimed for the work of insects in plant fertilization. Mr. Meehan says:—

I have thought it best to take as my text the exact words of a popular teacher of science. He says:—"All plants with conspicuously coloured flowers, or powerful odours, or honeyed secretions, are fertilized by insects; all with inconspicuous flowers, and especially such as have pendulous anthers, or incoherent pollen, are fertilized by the wind. Therefore, before honey-feeding insects existed, the vegetation of our globe could not have been ornamented with bright coloured flowers." This view is the general one, and thus has arisen a classification to which all flowering plants are referred. They are either Anemophilous, wind lovers; or Entomophilous, those which desire insect aid. I may here remark that a sort of necessity for cross-fertilization was perhaps suggested by a belief in a popular impression that is probably erroneous. We thought nature had a horror of in-and-in breeding. Our choice breeds of cattle are the results of this sort of selection; and they have proved just as healthy and productive as the veriest scrub. But it was thought they would at last revert to their originals when the hand of man was taken away; at our last meeting, however, Prof. Brewer showed this was also a mistake. Quite recently Mr. George Darwin has shown, in a remarkable paper made up of an extensive study of the old families among the English nobility, where intermarriages among relatives have been a sort of social necessity for ages, that the popular idea is erroneous. These intermarriages have resulted as productively and as healthily, mentally and morally, as the average marriages of the world. The question of insect fertilization is, therefore, no longer a question of necessity; it has to stand on the facts alone as they are adduced.

That some plants require external aid is certain. The Yucca and Orchideæ are familiar examples. But there are general considerations which show how limited insect aid must be. The flowers of the Rocky Mountain region are beautifully coloured; but Fremont pathetically describes the solitary bee that rested on his shoulder on the top of Pike's Peak. On my first visit the comparative absence of insects proved very annoying to the entomologists who accompanied me. It was a frequent subject of conversation whether Fremont's bee was not apocryphal, and though a visit some years later found some humble bees on Polygonum bistorta on Gray's Peak, and thereby enabled me to do justice to the veteran explorer, the incident shows how rare such insects are. Indeed, the paucity of animal life of all kinds in the Rocky Mountains is well known; but there is no more scarcity of seed in the coloured flowering plants than in similar ones elsewhere. Nearer home we see the same thing. In many of our woods spring flowers abound, but any observer of woodland flora must have been struck, especially in spring, with the rarity of insects about them. But all these plants, without any remarkable exceptions, seed well. Again, Red Clover fields are favourite pasture grounds for humble bees, but when, as is the case in my vicinity, the White Clover abounds in blossom, they totally abandon the Red Clover fields. I have watched Red Clover fields carefully several times a day for a week at a time, after their abandonment by the bees, without seeing anything but a few, very few, diurnal Lepidoptera on them occasionally, and certainly of no consequence for fertilization to this immense extent, yet the flowers bore seed as fully as the most insect-frequented field would do.

General evidence of this kind is, I think, fair presumption against insect agency to any material extent. But the direct and positive evidence is what we want; and here I find it in great abundance. Many flowers are so constructed among the so-called entomophilous class that they must of a necessity fertilise themselves. I do not refer to the cleistogamous plants, which seed without perfecting their corollas, but in regular flowers where it is not usually suspected. In Melampyrum americanum the curved apex of the pistil is clasped by the stamens, and held in contact with the pollen just as in a cleistogamous Violet. A large number of plants have their pistils covered by their own pollen before the flowers open. Of these I have, especially for this paper, gone over observations previously made with species among Wistaria, Glycine, Cercis, Genista, Lathyrus, Colutea, Ballota, Leonurus, Phaseolus, Pisum, Linaria, and some others. This is particularly the case early in the season; later the pollen sacs burst more generally about the same time with the opening of the corolla. It may be objected that the covering of the stigma with pollen is not fertilization, as it requires a peculiar condition of the pistil to receive it. But pollen has a long vitality. Carrière has found its fertilizing power unimpaired after three months old in one species, and other cases have been recorded. Not to leave this point open, I had some unexpanded flowers of Wistaria sinensis examined by my friend Dr. Gibbons Hunt, of Philadelphia, the accomplished microscopist, who reports that the pollen-tubes had actually made their descent through the pistil towards the ovarium. But what I regard as remarkable is that many flowers which have been taken by European observers to illustrate the necessity of insect fertilization, not only fruit abundantly, when they are fertilized before they open, but in many cases fruit, when not visited by insects, and in some cases, as in Melampyrum, have arrangements for self-fertilization. Thus Dr. Farrar's observations on the Garden Bean, in 1869, Dr. Ogle's, in 1870, on the Scarlet Runner, Mr. Bennett's on the Pansy, and I think I may include Mr. Darwin's on Clover, and those by the author of this paper on Linaria vulgaris. In my garden I have rarely seen an insect on the Common Pea; yet every flower bears its pod. Its pistil is clothed with hairs on the upper surface, and curved towards the standard with the anthers on the upper side. As soon as the anthers burst they pass downward, brushing their pollen against the stigma and covering it with it. The Lima and Bush Beans are also rarely visited on my grounds, where Clover abounds, but are abundantly fertile. The pistil protrudes in many of these papilionaceous plants, as noted by authors above quoted, when an insect or any pressure is made to bear on them; but it will be found that in many cases the very movement makes them clutch, as it were, their own pollen. In the Violet and Pansy the lifting "apparatus" certainly throws the pollen on the entering insect's back, but only to draw it against the stigma on the exit. In the White Clover Mr. Darwin's experiment nearly staggered me; it is so rare there is any mistake about his facts. He says he protected some from bees, and they bore no seeds; some exposed to bees perfected thousands. I am satisfied that in all cases I examined of flowers just before expanding, and before any insect had interfered with them, the pistil had received its own pollen. Mr. Darwin does not say how he protected his flowers. Nutrition is often interfered with by "protection"; and failure to seed follows. I endeavoured to repeat the experiment of protection for this meeting. I covered a patch of Clover with a sieve having one-eighth inch meshes. No bees could get to them. I think I may say every flower perfected seed. Unfortunately I found on one examination a small sand-wasp had ventured through, and was collecting pollen from a flower. I do not think any but this one entered, still it diminishes seriously the value of the experiment. I do not care to take the time of the meeting to refer in detail to the immense number of plants which cover their pistils with their own pollen, and which must limit seriously the extent of the entomophilous class; as any one, and I hope he will look, can find them easily. Even Müller himself admits that the four short stamens in Hesperis tristis is for self-fertilization, in case the two long ones should fail to meet with insects, for whose use he thinks they were intended, and this ought to be as true of all tetradynamous plants. And yet so thoroughly has the idea prevailed, that all petaloid flowers must have insect aid, that because a plant of this class brought to prominent notice by the Challenger Expedition, a Pringlea, was apetalous, Dr. Hooker was led to suggest that it must have the pollen of anemophilous plants. As this was found to be so, it is regarded as confirming that view, and yet with us Thlaspi bursa-pastoris, which has no visiting insects of consequence with us, has abundance of seed, as the horticulturist knows to his great annoyance. Indeed, the interpretation of the uses of structure often has two sides. I believe I was among the first to suggest that the lever-like, false anther in Salvia was an aid to cross-fertilization through insect agency, yet I subsequently noted in the "American Naturalist" for 1871 that if the plant had "sense" enough to plan such a contrivance, it parted with that good sense in Salvia involucrata, where the contrivance is perfect, but a subsequent patent spoiled the first. The Lobelia is a much-used illustration of the beautiful contrivance to insure insect agency. I confess I do not understand how self-fertilization is accomplished here, but I do know that L. erinus, entirely protected from insects under glass, seeds abundantly. Professor Gray says of Habenaria tridentata that in this species the summits of the sterile anthers receive pollen and are penetrated by pollen tubes; how far similar processes extend in Nature it will do no harm to consider, though out of place somewhat in a paper in which speculation is not in order.

But suppose that cross-fertilization by insect agency be all that is claimed for it, let us grant that there has been an effort on the plant's part to avoid self-fertilization, and to effect cross-fertilization by insect aid. The question follows, what has the plant gained by it? If it be not proved that in-and-in breeding—self-fertilization—is a detriment to continuous existence, the case, theoretically, is gone. But we have facts. Specularia perfoliata is said by

* Read at the Detroit Meeting of the American Association for the Advancement of Science.

the books to have its earlier flowers cleistogamous; but this is only so in open places. In shady situations all the flowers are of this character, and it is wonderful how productive and strong they are. I know an open wood in which the plant is a peculiar characteristic of the surface vegetation. I never saw one petaloid flower on these plants. Most of the seminal increase in the Violet, especially those which grow in woods, in those which produce cleistogamous flowers, is from this class. These species have held their own better, are more widely distributed, are in greater numbers, than those which depend on increase from petaloid flowers alone. In any theory of the survival of the fittest, we must take those to be the most fit to survive, which produce the greatest quantity of seeds, all other conditions being equal. A plant which perfects 1000 seeds will have a better chance of posterity than an individual of the same species that perfects but 100. If a plant thought, as one might almost say in view of popular theories, that it would gain any benefit by escaping from possible injury through in-and-in breeding, and thus changed its structure so as to favour only fertilization by insect aid, we see at once that it places itself in the position of all of us who give up to others the doing of our own work—it is often not done at all. This is actually the case with non-self-fertilizers. The Geranium is an example within general reach. In my garden I have paid most attention to Geranium sanguineum. The petals expand before the rupture of the pollen sacs. Five stamens elongate, and no sooner have they reached their full length, than the pollen cases burst and the anthers fall off. The other five follow in the same way all before the pistils have made their full growth. The filaments are persistent, close up among the pistils, and seem really in their utterly useless condition to say that something has gone wrong with the plant in its efforts at cross-fertilization. The seed-time tells the same story. More than half the flowers are without seed, large numbers with only one out of the five, and very rarely indeed are the full five carpels fertile. It may be said this is not its native country; insects in its own would have paid more attention to their duties. But granting this, it has lost the power which a self-fertilizer possesses of taking care of itself both at home and abroad. What has the Yucca gained? It is one of the most local in its distribution. Each species is confined to limited areas in comparison with self-fertilizers. Some seasons when the insect-fertilizer is scarce, as insects of many species often will be, there is barely a seed, as I have witnessed myself, in the chief localities for Yucca angustifolia in Colorado; indeed, its existence depends on its persistent roots. If it were an annual, I believe the whole genus would now be well-nigh extinct. It is the same with the Orchideæ, another family that has a difficulty in self-fertilization. If one, without regard to any theory, but in the light of well-known facts in botanical geography, were to be asked which family he thought the most likely to first disappear, I think he would say Orchideæ. They must stay where their especial insect lords are, and they have to endure the great chapter of accidents, without the chance of escape to foreign lands. Surely we see that self-fertilizers have the advantage in the great struggle for life. If we were to credit plants with a common sense with which in some quarters they have been almost invested, I think we must award the point of greatest wisdom to those who catch insects and eat them, rather than to those which dally with them to their own final ruin.

There are plants which cannot fertilize themselves; but why must we be driven to the opinion that this is a selection—a choice? May it not be rather what popularly we should call a necessity? In the course of ages may there not be a failure of nutritive power which would interfere with the relation of the sexual organs? This suggestion is borne out by facts. I have already shown the members of this Association by numerous facts in several papers that the male and female sex in plants, that is, whether the male or female organs in the flower are most favoured in development, is wholly a question of nutrition. In this paper I have shown a similar law. In the earlier flowers of the season the anthers usually, in many species, burst just before the flowers open. Later in the season, when vitality is more nearly exhausted, the male has not the same active development, and perfects its pollen only after the expansion of the petals. This overlooking of vital power, and looking to fertilization merely for fruitfulness, is, I believe, one cause of error in the discussion of the present question. A flower has perfect pistils and stamens. It does not fruit, therefore it was not fertilized. This is the argument. Indeed, I may here quote again the exact language of the author from whom I took my text:—"Farmers on the banks of the Rhine reported years ago that orchards in which bees are reared are more productive than those in which there are none." But American experience now is as good as Rhine experience long ago. Our orchards are often white with bloom and hardly a fruit follows; and again very few flowers, but most of them set. There may be no difference in the number of bees about them. It is wholly a question of how favourable were the influences of nutrition on the maturing flower-buds the autumn before. I have already shown that the Wistaria is actually fertilized by its own pollen, and yet it is notorious that the Wistaria rarely seeds in this country, the forces of nutrition not favouring it. Very slight local causes often determine these matters. I once had a very large White Noisette Rose, called Woodland Margaret, trained to the roof of a greenhouse in which was abundance of light though little sunlight; but it would not flower. In summer, however, a few branches would get through a ventilator kept open, and these always blossomed freely. All cultivators of winter flowers know the influence which direct sunlight has over reflected light in the formation of flowers. So a ringed branch produces flowers when one untouched does not. This illustrates the influence of various phases of nutrition on the floral organs, and I have no doubt that the difference in the conclusion arrived at by Mr. Darwin and myself in White Clover would be accounted for in this way, if all the circumstances were known. Many instances illustrating this nutritive power might be given. I will give but one more. In our region the Cercis canadensis is very irregular in seeding. A tree this year loaded may not have one seed-vessel next year. In olden times late frosts furnished the explanation, but more recently imperfect fertilization. I have a row of fifty-two trees about fifteen years old. These are all apparently alike in general health and vigour. Most have no seeds, but nine have a profusion. They are all exactly alike as regards fertilizing conditions.

I have not thought it necessary to occupy your attention by a long array of facts. What I have adduced is sufficient, I trust, to prove:—First, that the great bulk of coloured flowering plants are self-fertilizers. Secondly, that only to a limited extent do insects aid fertilization. Thirdly, self-fertilizers are every way as healthy and vigorous, and immensely more productive than those dependent on insect aid. Fourthly, that where plants are so dependent, they are the worse fitted to engage in the struggle for life, the great underlying principle in natural selection.

GARDEN RECEIPTS.

Worms in Pots.

The common Earthworm is apt to infest the balls of pot plants and spoil the soil; it also stops up the drainage-hole in the bottom of the pot, so that water cannot escape, and the soil becomes sour in consequence. The presence of Worms in a pot is indicated by the accumulation of their casts on the surface of the soil. When a pot is suspected of containing Worms, it should be tapped smartly with the hand; the Worms in alarm come to the surface, when they should be seized at once, otherwise they will quickly retreat to the centre of the ball, so soon as they feel the least touch. If they cannot be dislodged in this manner, the ball must be carefully removed from the pot and examined, but not broken. Should this also fail, then water the pots with water heated to 123° Fahrenheit, or with an infusion of Tobacco, Walnut leaves, or with liquid insecticide, or a solution of guano. This will send the Worms either to the surface or to the sides of the pot, when, by lifting out the ball, they may be caught and killed. If the pot be placed half-way in a vessel of water heated to 123° Fahrenheit, it will be found the surest way to send the Worms to the surface.

—— Lime-water is also a good remedy. Pour 2 gallons of water on 1 lb. of lime; stir well up, let the liquid stand forty-eight hours, and then, having stopped the holes in the pots with clay, deluge the soil with the clear lime-water only, and the Worms will come to the surface. Remove the clay from the pot-holes after six hours, taking care to make the drainage free.

Among miscellaneous remedies may be mentioned boiling water, paraffin oil, benzoline, and carbolic acid. A sprinkling of soot spread over the drainage, before putting any soil into the pot, will prevent Worms from coming up into the soil for some time; but this gradually loses its power, and does not destroy those which are in the soil when potting takes place. It is, therefore, a good plan to pick the Worms from the soil before using it; a little soot mixed with it will effectually get rid of those smaller ones which may have been overlooked. Soot is a valuable fertilizer, and may with advantage be used in soil for nearly every purpose. Care should be taken that the bottoms of pots are never placed in loose soil, or any other free matter through which Worms can penetrate, or your preventive measures and trouble will be of no avail; a firm bot-

tom of coal-ashes is the best substance on which to set pots, as it resists all attempts to get through. Gravel has not the same influence, unless laid in the form of concrete. Strawberry plants in pots are often infested with Worms. It is next to impossible to keep them out of these; they generally find their way into the small pots when the runners are being rooted in them. A handful of ashes under each pot will prevent their access in a great measure, but runner pots are often plunged in the soil, and they can then get in from either top or bottom. As many as are visible will, of course, be thrown out at the time of shifting, and if any still remain, the application of lime-water is the best method of destroying them.

Worms on Lawns.

Worms on lawns are often troublesome, especially during wet weather. Their entire eradication is impossible; the only remedy, therefore, is to fight them continually. Sweep the lawn with a Birch or other rough broom, so as to disperse the casts, then strew the surface with common salt at the rate of 8 bushels to an acre, choosing a moist day for the operation. Less than 8 bushels would do good, and a bushel or two more would do no harm. This dressing not only banishes the Worms from the surface, but, when used in the quantities just indicated, it has a beneficial influence on the Grass. The salt may be dissolved in water and applied in a liquid state, but the labour and waste of time thus incurred are needlessly spent, as no better results are experienced by this method than when common dry salt is employed. Six bushels of salt and 6 or 8 of soot well mixed together, and applied either in a liquid or solid form to a lawn of, say, an acre in extent, is not only an invaluable safeguard against Worm-casts, but is also a good dressing for the Grass; even soot alone, applied at the rate of from 12 bushels to 16 bushels to the acre, is equally serviceable for both purposes. Air-slaked lime, used at the rate of from 20 bushels to 30 bushels to the acre, or mixed with soot, or salt, or both, also forms a good dressing, especially for Mossy lawns, and it likewise destroys Worms and grubs.

—— Another very effectual cure for Worms on lawns is first to apply salt in the proportion of about 6 cwt. per acre, and then water well with lime-water made by placing 12 lb. of fresh or unslaked lime in a hogshead, and pouring 30 gallons of water over it, stirring it well up, and allowing to stand forty-eight hours. The lawn is to be watered with the clear liquid by means of a rosed watering-pot during damp weather, giving a good soaking the evening succeeding the one upon which a good watering has been given. Ammoniacal liquor diluted with six times its volume of water will answer even better than the lime-water, but it has the disadvantage of making the lawn look brown for a time. Both act by bringing the Worms to the surface, whence they may be swept up and cleared away.

—— Where the Worms do not exist in large quantities, the lawn may be watered with the following solution:—Dissolve 1 oz. of corrosive sublimate in a little hot water, which mix with 40 gallons of pump water, and apply to the turf with a garden watering-can, choosing wet weather, when the Worms are near the surface. A writer in the "Field" has tried this remedy on a moderately-sized lawn, employing a man and a boy a whole day with this result, that there was scarcely a Worm-mound visible and the Grass as green as in summer. The pests will appear above ground at once if a sufficiency of the mixture be applied.

—— Take up the turf and relay it on 1 in. of fine coal ashes; if the Grass be weakly, spread a thin coating of good fine soil on the ashes before laying the turf down. There will be no fear of the Grass burning in dry weather; the wet soil, which induces the Worms to make their appearance, will keep the ashes moist and cool. Thorough draining will also remedy the evil, but as the turf would sink over the drains, it would involve as much trouble as relaying.

—— Peewits are also recommended for keeping down Worms. They hardly ever cease eating whilst a Worm is to be seen; they must be driven in at night or the cats will come after them. In the daytime there is not much fear, for if puss comes too close they will call out loudly for help. When Worms are scarce, put near their water-trough a little chopped meat, or some bread-crumbs mixed with hot dripping; one wing must be kept clipped. In addition to their very active services, these birds would be very interesting and attractive pets for many years; they cost about 3s. 6d. each.

C. W. Quin.

[Next week we shall publish a glossary of the materials mentioned in the articles on Garden Receipts with their synonyms, prices, &c.]

JAPANESE DWARF TREES.

Among Conifers may be noted young plants of that Japanese species seen under the wings of Japanese buildings—quaint pigmies not 3 ft. high, yet over seventy years old. They are gnarled and twisted, as if they had fought the winds and caught their picturesqueness of form—as old Oaks catch theirs—by battling with tempests and wintry storms upon the hills. And yet these dwarf trees are thoroughly creatures of art. By examining closely the specimens in Japanese grounds one may see traces of the dwarfing process. The leading shoots have been clipped or bent downward; the lateral branches turned in and tied back; lusty limbs twisted and wrenched into quaint postures; marks of the torturing-pins, and bands and cuts are still observable; it is a crippled dwarf of a tree made quaint and picturesque by years of struggle. Is there a compensating beauty in them? Not surely as we reckon the beauty of plant growth. But consider that the Japanese, in their horticultural system, have offices for such dwarf trees. With them no homestead is complete without its garden; a few square rods may be all at command, but this area must have its garden treatment, and the gardens are modelled after Nature. "San-sui" (mountain and water) is the term which in the Japanese describes the cultivator's work. The aim is—within however a limited an area—to present a complete landscape, with rock, valley, plain, water, and mountain. Under such miniature presentment, trees and plants must be dwarfed to bear proper relations to the dwarfed valleys and rocks. To such an extent is this copying of Nature in miniature carried that a rocky landscape, with its heights and level spaces and trees, is wrought out, with close attention to proportions, within the limits of a great bronze basin. We doubt if cultivators of the West will emulate them in their mimicry of Nature; but they may well emulate the painstaking skill which makes such small successes possible, and the assiduous care and the close study of plant-life which are enforced by such arts.—Donald G. Mitchell.

Chrysanthemums in and near London.—An attractive exhibition of Chrysanthemums may now be seen in the central corridor of Messrs. Veitch's Nursery at Chelsea, the plants being tastefully intermixed with Palms, Ferns, and other fine-foliaged plants, which set off the colours of the Chrysanthemum blooms to excellent advantage. The central transept of the Crystal Palace has also been gay for the past fortnight with a well-grown collection of these flowers, and Messrs. E. G. Henderson and Dickson & Sons have had a good display of them in their nurseries at Pine-apple Place and Amherst Road, Hackney. At the different Chrysanthemum Shows, too, the exhibits have been highly creditable to all concerned; indeed, it is surprising the excellence to which amateur growers have brought the Chrysanthemum, even amid the smoke and dust of London. Prominent among the varieties may still be seen some of the good old kinds, such as Jardin des Plantes, Princess Beatrice, Empress of India, Vesta, Lady Marguerite, the different varieties of Cedo Nulli, Princess Teck, White Globe, Nil Desperandum, and Hero of Stoke Newington. Hand bouquets, composed of large-flowered and other Chrysanthemums have been shown this year, and with good effect; the blooms of which they consisted were not formally arranged as might have been expected, but were associated with foliage in such a way that every flower could be distinctly seen.

Wintering Parsley.—As few herbs are so continuously in demand as Parsley, a plentiful supply of it through the winter is always desirable. A good way to preserve it is to take some flour barrels, get a 2-in. auger and bore their sides with holes 1 ft. apart every way; put 6 in. of soil in the bottom of the barrel, then draw the roots of a good plant through the bottom holes, fill up with soil till the next holes are reached, draw in some more plants, and so on until the barrel is full, then put four or five plants on the top; place the barrels in a cool house where they can get plenty of light. The produce, in both quantity and quality, will be such as will not disappoint any one who gives the method a trial, and such barrels are not unsightly. The plants should be good and strong for this purpose, or the produce will be small.—S.

SOCIETIES AND EXHIBITIONS.

SCOTTISH ARBORICULTURAL SOCIETY.

The twenty-third annual general meeting of this Society was held in the Lecture Hall, at the Royal Botanic Garden, Edinburgh, on the 1st inst.; Dr. Balfour in the chair. The treasurer's statement showed a balance of £339 in favour of the Society. Mr. Buchan, secretary of the Meteorological Society, read the report of the committee on the grant for the prosecution of the inquiry into the influence of forests on climate, and ultimately in reference to the influence of forests on rainfall. No amount of rain gauges, he said, however placed, would throw any light on the question of the influence of forests on rainfall, for the simple reason that there were many causes which operated on local rainfall of which we knew nothing. The committee had come to the conclusion that the question should be attacked by means of instrumental observations on the quality of the air, and particularly as to its temperature and moisture. Means were of course taken to ensure the instruments being so placed that the air surrounding them should be clearly air in the first place affected by forests, and, in the second place, air not influenced by forests. The peculiarity of the viscosity or adhesiveness of the air had determined the committee in the particular mode of conducting the inquiry, and sets of instruments had been erected in the middle and outside of woods. The locality chosen was Carnwath, kindly placed at the disposal of the committee by Mr. Hector Maclean. The observations made this year had corroborated the results of previous years' observations. One of the most remarkable of these results was to show that the temperature inside the wood was greater than in the outside during the whole of the year except the autumn, but that the temperature at nine in the evening was the same both in the inside and outside of the wood. In the spring and early summer the air was warmer and moister than outside the wood, but during the rest of the year it was damper, and this had been proved in a remarkable degree by the observations made during the past month of September, which was unusually damp. He thought that something should be done next year to have a more complete discussion of the observations than had yet been made. For instance, the daily observations ought to be separated as regarded strength of wind, the amount of cold, the effect of sunshine, of cloud, of frost, or continuous cold—the effect of continuous rain on the quality of the air both inside and outside the wood, and the converse—the effect of continuous drought. Until this was done, the full value of the observations would not be realized. The instruments were to be increased by two sets of underground thermometers. He hoped that when the great importance of the observations was fully appreciated, there would be little difficulty in getting a share of the Government grant for scientific observations for the purpose of pursuing their investigations.

The President moved that the Society renew the grant of £10 to the committee, and that special thanks be given to Mr. Buchan for his labour in connection with it. He was sure that excellent practical and scientific results would be realized from the observations.

Mr. William Gorrie read the report on the competitive essays sent in during the year. On the sealed envelopes being opened, the following were found to be the successful competitors:—On the Anatomical Structure of the Leaf as a Means of Determining the Species of Abies—Dr. McNab—the Society's gold medal; The Utility of Proprietors having their own Home Nurseries—Mr. W. W. Robertson—bronze medal; Report on Old and Remarkable Trees—Mr. James Duff—No. 1 silver medal; On the Diseases of the Larch—Mr. D. F. McKenzie—bronze medal; Present State and Prospects of Arboriculture in the County of Kent—Mr. Duff—silver medal; A Plea for the Extension of Home Forests—Mr. David Scott—silver medal; Report on the Cheapest and Most Effectual Means of Clearing Land intended for Plantation—Mr. D. F. McKeKenzie—silver medal; On the Best Method for Seasoning Timber—Mr. Thomas Wilkie—No. 2 silver medal; On the Introduction of a New Class of Fencing—Mr. Wilkie—bronze medal; On the Deleterious Effects of Sulphur upon Iron Fencing—Mr. T. Wilkie—silver medal; Rustic Chair, made by competitor—Mr. James Gair—No. 2 silver medal.

The President delivered his retiring address, in which he congratulated the Society on the success of its operations. The propriety, he said, of foresters meeting together and discussing points in relation to the practice of their profession could not be overrated, and indeed he maintained that it was only by such intercourse and interchange of views that arboriculture could be advanced.

Office bearers were then elected for 1876-77.

Mr. Dunn, Palace Gardens, Dalkeith, read a paper "On the Insects Injurious to Forest Trees, and their Remedies." Whether from a scientific or a cultural point of view, this subject was, he said, of the greatest importance. The aphis, or plant-louse, was the most universally distributed of all the pests that preyed upon trees, and the injury done by it was incalculable, inasmuch as not a plant which existed was exempt from its attacks. One aphis was capable of producing the enormous multitude of one quintillion of its species in a year, and these lived upon the young and tender wood and leaves, sucking up the sap and curling up and blistering the leaves, which ultimately became yellow and dropped off. The aphis emitted the well-known honeydew so common on trees and hedges in spring and early summer, and which was so deleterious to vegetation by clogging up the pores of the leaves. Almost every plant had a species of aphis common to it alone, but the most destructive were those which attacked the Larch and the Thorn. Red spider was very destructive to Limes, Poplars, and Elms, and to Conifers in dry weather, while the coccus or scale infested almost every tree and shrub, and unlike many other insects it remained uninjured by the severest weather, and nothing but rooting out and burning the trees would save plantations in which it appeared. Mr. Dunn then went on to describe the numerous varieties of beetles which prove so destructive to trees, making special mention of those which attacked the Pines, and of those whose grubs bored into the roots of trees. Timber trees were also subject to the assaults of many moths, such as the goat, the leopard, and the hawk moths. After mentioning several decoctions as likely to be useful in destroying insects, he concluded by advising foresters to clear their plantations of all dead or fallen woods, and to encourage the breeding of birds which preyed on insects, such as the woodpecker, starling, sparrow, chaffinch, goldfinch, swallow, greenfinch, wagtail, tom-tit, thrush, robin, redstart, titmouse, blackcap, nuthatch, flycatcher, whitethroat, and wren. Dr. Cleghorn adverted to the importance of the subject brought forward by Mr. Dunn, and spoke of the vast amount of timber destroyed by noxious insects both in Britain and India, while our knowledge as regards remedies was imperfect and meagre. The fine entomological collection made by Mr. Andrew Murray, and now in the Bethnal Green Museum, was worthy of careful inspection. The British Government were not inactive in this important matter, for attention had been drawn to it by a circular sent to all the forest officers in India. Mr. W. M'Corquodale spoke of the ravages of the black beetle in Pine woods, and suggested that the only cure for it was rooting up and burning the infested trees, and clearing the plantations of all decaying branches and fallen wood after each thinning. Mr. M'Corquodale also read a paper on "Seasoning Timber." He advocated the natural process of seasoning by drying. The trees should be cut early in winter and allowed to stand till the spring. In his experience this was more effective than any artificial process, such as charring, or the application of creosote or tar. The paper evoked considerable discussion—several members maintaining that the only way to season timber properly was to get all the natural sap out of it, as when that remained, fermentation and decay set in.

At the dinner in the evening, at which about seventy were present, Dr. Balfour referred to the Arboretum which the city of Edinburgh had acquired, and to the great use which might be made of it as a school of forestry as well as for a pleasure park. All that they were waiting for was the Government decision as to how the Arboretum was to be fenced, &c. Fifteen years ago, it was said, the membership of the Society was only 75, now it was over 800, and had a small capital fund.

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

The slip supplement which you were good enough to insert has brought hosts of most encouraging letters, and I hope that you will find room for a few extracts from some of them. Of course I cannot publish names. Extract No. 1:—"I think I must be one of the oldest Fellows of the Horticultural Society at £4 4s. per annum. I had quite made up my mind not to renew my subscription, until I read your letter to the 'Times' (then follow reasons for non-renewal). I am willing to give the revived Society another trial. You may enter my name as a subscriber of £4 4s., and that of my gardener of £1 1s."—Extract No. 2, from an eminent London doctor, who does wonders with his plants under most unfavourable conditions:—"I have one or two more names which shall be sent to you soon. If it will be of any use, I will promise to get ten, including myself, and will guarantee the ten subscriptions of £1 1s. for one year, as I feel sure I can find ten subscribers amongst my friends."—Extract No. 3:—"Your scheme for the reconstruction of the Royal Horticultural Society appears to me to meet the present case excellently; I therefore have much pleasure in subscribing my name to the enclosed circular, and if I can be of any use in canvassing amongst the neighbouring lovers of horticulture, I shall only be too glad to assist you, and also to add my name to the committee."—Extract No. 4:—"I have the pleasure to enclose one of your papers which Mrs. —— was good enough to send to me. I wish you success; and if you think I should subscribe £4 4s. instead of £1 1s., I will do so with pleasure."—Extract No. 5, written at the bottom of signed slip:—"Please send me a lot of these prospectuses, and I will distribute them for you." These extracts are taken from many letters to the same effect.

George F. Wilson, *Heatherbank, Weybridge.*

OBITUARY.

Died on Sunday, November 12, 1876, Thomas Paterson, aged forty-two years, at the Royal Horticultural Gardens, Chiswick.

The Wild Spaniard (Aciphylla squarrosa).—This very singular and distinct-looking plant, introduced by Mr. Gorrie from New Zealand, is hardy on his rock-garden at Edinburgh. It resembles a Yucca with branched leaves, but it belongs to the Umbellate Order. From the colour of the foliage—a yellowish bronze—the plant is ornamental on the rock-garden.—V.

The Corstorphine Sycamore.—This fine form of the common Sycamore is usually called the Corstorphine Plane in Scotland, which is to be regretted as likely to cause confusion in various ways, the name being erroneous. There is little more reason in appropriating the name Plane for it than there would be that of Hawthorn for some other shrub. We may do as much harm by the improper use of English names as of technical ones.—J. O.

No. 262.] SATURDAY, NOVEMBER 25, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

MIGNONETTE THE YEAR ROUND.

WHERE suitable frame accommodation is limited, as is often the case in small gardens, difficulties in the way of growing early Mignonette may perhaps present themselves, but where a warm pit is available for spring-sown plants these will disappear, and those sown at other times of the year may be grown without artificial heat; indeed, the best plants are invariably those grown in the open air during the summer months, but even in this case it is often necessary to protect the plants from heavy rains, which are injurious to them. They are very liable to damp off, and for this reason it is always advisable to place Mignonette in a position where it can be readily protected when necessary. Many failures in its culture arise from the desire to grow more plants than time and other conveniences will permit: it is always better to have half-a-dozen plants well grown than to have a large quantity badly grown. In all cases it is best to have sufficient plants in case of failure, but overcrowding should at all times be avoided, for under such conditions it is impossible to produce satisfactory results. In order to have a succession of well-flowered plants the year round, it is, of course, necessary to make several sowings, but these need not be made so frequently as is often thought necessary, because, by allowing a portion of the plants resulting from any particular sowing to come into flower at a time, and by keeping the blooms picked off another portion to be retarded, a succession of blooms may be easily kept up for six months—the produce of only one sowing. Three sowings will, under proper management, furnish good flowering plants at all seasons, and these sowings should be made in January for plants to flower in spring and early summer, in May for late summer and autumn bloom, and in August for winter use. The seeds should always be sown in the pots in which the plants are to remain, except perhaps in the case of single plants to be grown as standards, for Mignonette as a rule dislikes transplantation, and although success has often attended the lifting of plants from the open ground and potting them, yet on such practice little dependence can be placed. Pots of any size may be used in which to grow Mignonette, but those which are most convenient are 6-in. or 8-in. ones; these should be clean, well drained, and filled three parts full with a mixture of good turfy loam, rotten manure, broken bricks, or old lime rubbish and road sand; a little fine soil should then be placed over this, and the whole should receive a good watering with a fine-rosed can, after which twelve or fifteen seeds may be evenly distributed over the surface of each pot, covering them slightly with more fine soil, and gently pressing them down with the bottom of a flower pot, in order to make the whole tolerably firm. In the case of the January sowing, the pots should, if possible, be plunged in a gentle bottom-heat, but for other sowings this is unnecessary. In any case, however, the pots should be plunged where little water will be required to keep the soil in a moist condition. After the young seedlings are up, abundance of air must be given them, and they should be allotted a sufficiency of space to prevent them from becoming drawn. As soon as they are large enough to handle they should be gradually thinned out, ultimately leaving some five or six of the strongest plants in each pot, and when these have attained a height of 5 in. or 6 in. above the rim of the pot their tops may be pinched off, an operation which will induce them to break strongly and grow bushy. When stopping plants of any kind, it is a mistake to merely nip out the extreme points, as is often done, for no plants will throw out shoots from soft, unripened wood; they should therefore be pinched down to firm wood, where branching takes place at once, and where the growth made is stronger than that produced from softer wood. Stopping at intervals may be continued until the plants are wanted to flower. When the pots become full of roots, they may be filled up to within $\frac{1}{2}$ in. of the rim with fine, rich soil. The chief points to be observed after this are giving water and air, of which too much can hardly be admitted, but care must be taken to avoid cold draughts as much as possible. After the month of May the sashes may be removed and the plants fully exposed to sun and air, replacing the sashes on the occurrence of heavy storms or continuous rains. Water should never be applied, except when the plants really require it, and it should then be given in sufficient quantities to soak the whole of the soil. Much watering is saved when the pots are plunged in ashes, which should be kept in a moist condition. Liquid manure or guano water may be advantageously given to the plants at every alternate watering, taking care that it be applied in a sufficiently diluted state to prevent its being injurious to the plants. Small sticks will generally be necessary to keep the plants in an upright position, but these should never be fixed in such a way as to give them a formal or stiff appearance, nor should they be inserted near their bases, such practice being often the means of spoiling many good plants of Mignonette. Gentle sprinklings of water overhead may be given during hot weather, but on dull, sunless days these should be discontinued. August-sown plants that have been grown in the open air will require to be taken indoors by the end of September and placed where there is sufficient heat to keep them from being injured by frost or damp. The plants should always be as near the glass as possible, without actually touching it, and the sashes should never be closed longer than is absolutely necessary for the safety of the plants. Whenever Mignonette is introduced to the conservatory or sitting-room, it should be placed in the lightest and most airy position available, in order to preserve the blooms in good condition. When plants are grown singly in pots a shift now and then will be necessary, but this must be done with care, otherwise failure will be the result. Seed for this purpose is generally sown in June or July, but it may be sown earlier if required; three or four seeds should be sown in 3-in. pots under the conditions mentioned above, except that the pots may be filled with soil at once, and that it should be made a little firmer than for ordinary sowings, in order that the ball may turn out of the pot more readily when wanted, thus rendering the difficulties attending shifting less formidable. As soon as the plants are up they must be thinned until the strongest one only is left, which should immediately be furnished with a small stick as a support while it is advancing in growth, always taking care not to have the ties too tight. When the plant has attained a height of 6 in. or 8 in., it must be decided in what shape it is to be grown, whether as a standard, pyramid, or bush; if a standard it may be allowed to grow to 12 in. or 18 in. high, stopping the side-shoots as they appear, but not wholly divesting the stem of both shoots and foliage, as is often done; on the contrary, rather leave a few extra leaves until the plant has become well established, when it will be better able to withstand being deprived of its foliage. When sufficiently high the point of the leading shoot may be nipped off, leaving four joints nearest the top to form the head; when these have made several joints they should also be stopped, an operation which may be continued until a good bushy head has been formed. When pyramids are required the side-shoots should be encouraged to grow, and should be pegged down as they advance, stopping them and removing all premature flowers, as in the case of standards. Bush-trained plants should be stopped when they are 6 in. high, and the shoots should be pegged down like those of pyramids, in order to bring them into a proper shape. A shift should be given when the soil has become full of roots, but in no case should the plants be allowed to become absolutely pot-bound; nor should potting and stopping the shoots take place at the same time; the stopping should be done first, and as soon as the back joints begin to break, a shift may be given. As regards the outdoor cultivation of Mignonette, it is so easy that few directions are necessary. Better results might, however, be obtained by paying a little attention to thinning. The ordinary practice is to sow the seed, and allow the plants to take care of themselves. Thus treated, instead of lasting in good condition for several months, as they would do were they properly thinned, their beauty is over in a few weeks. Mignonette might be

oftener introduced amongst dwarf shrubs, or other hardy border plants than it is. It is used in this way on the Thames Embankment, and with the best result. Under such circumstances the plants cover all vacant spaces, and make quite a pleasing display, the fragrance which they emit being not the least of their attractions. With respect to varieties, the best for outdoor culture is the common Dwarf Mignonette; but for general pot culture the large-flowering kind is to be preferred; and for standards or pyramids, Parson's Tree Mignonette is probably the best; of this there are two kinds—one with pure white flowers, the other with blossoms like those of common Mignonette. S.

NOTES OF THE WEEK.

November Flowering Plants.—This is certainly the deadest time of the year for out-door flowers, and the frost of the 7th has made the garden barer than usual. There are still, however, a few stray Roses to be picked, and a few Anemones and Polyanthuses that have come out before their time; but of flowers now out and in their season the number is very limited, I can only note the following, viz., Jasminum nudiflorum (rather before its time), Helleborus altifolius (this is the form commonly called major or maximus, but as H. altifolius is the recognised name in European botany, the others ought to be given up), Iberis semperflorens (rightly so named), Clematis cirrhosa (this South European Clematis deserves more notice than it generally receives; its flowers are buff in colour with a tinge of green; both in habit and foliage it is very elegant, and it is valuable as a late-flowering plant); and, lastly, we have Crocus longiflorus (odorus), certainly one of the loveliest of the family, and apparently quite regardless of frost. These are all the flowers now out, for Schizostylis coccinea and Chrysanthemums have been effectually checked by the frost. But to these may be added two fruits, which are now very showy—the Physalis Alkekengi and Cotoneaster Simmonsi.—Henry N. Ellacombe, *Bitton Vicarage, near Bristol.*

Sophronitis grandiflora.—Several hundreds of this beautiful winter-blooming Orchid are now flowering in Messrs. Rollisson's Nursery at Tooting. It is one of the most brilliant and striking of all Orchids, its butterfly-like flowers being of a rich scarlet colour, the tint being, however, variable in different individuals.

The Lemon Pippin.—Numerous as are our good cooking Apples, there are yet good points to be gained in them, particularly in delicacy of flavour and piquancy, with sufficient richness not to require the aid of any but their own sugar. From this point of view the Lemon Pippin deserves particular mention among the Apples now obtainable in our markets.

Sedum spectabile.—Two plants are sold under this name, one is worthless, the other is handsome. The former is S. Fabaria, and has almost colourless, weedy-looking flowers; the latter is the true S. spectabile, with fine trusses of pink bloom, and well suited for late decoration. Neither, however, approach the beauty of S. Sieboldi, whose flowers are clear rose, and whose foliage in dry situations turns just now into vivid red.—Salmonicefs.

Choice Orchids in Flower at Chelsea.—One of the most chaste of what are called "Indian Crocuses" is Pleione Reichenbachiana, now in flower at Messrs. Veitch's—a kind similar in habit to its congeners. The sepals and petals which are whitish in colour, are densely speckled with lilac, and the throat, which is pure white, is enriched with strikingly pretty amethyst blotches. Liparis pendula latifolia, also in flower at the same establishment, is a graceful and desirable species, and a fit companion for Dendrochilum filiforme, which it somewhat resembles in habit of growth and colour. The pseudo-bulbs, which are club-shaped, are terminated by two bright green, lance-shaped leaves, and from the apex of each young growth hangs a graceful spike of pale yellow, orange-lipped blossoms, the whole inflorescence being as delicate as the finest filigree work. Bolbophyllum auricomum, a delicate little Burmese species, is likewise in blossom, its chaffy-looking, pure white, orange-lipped flowers being arranged on slender, pendent spikes, 5 in. or 6 in. in length, each flower measuring about ½ in. across: this plant is said to be a great favourite in Burmah, where its flowers are used as ornaments for the hair. Oncidium purpuratum is another rare species, similar in habit to the well-known O. luridum, but much more handsome in colour. Its flowers measure about 1 in. across, and are arranged on a branching spike about 2 ft. in length. The sepals and petals, which are crisped, are rounded, and of a warm greenish colour blotched with chocolate-brown, as is also the apical lobe of the three-lobed lip, the lateral lobes, auricles, and the W-shaped, two-horned crest being of a clear purple colour. Masdevallia Chimæra is showing flower in a peculiar manner, the slender stems being produced Stanhopea-fashion, a habit which necessitates its culture in baskets.—B.

Paper-white Narcissus.—Mr. Poulton, of Edmonton, who cultivates these charming winter-flowering plants on a very large scale, sends us some unusually fine specimens of them. It is a great gain to have this handsome flower of the genial fields of the Riviera popularized in our greenhouses and flower markets, as it has been of late years. It is to be hoped that it will be as much at home in our open borders.

Regeneration.—Mr. Tom King, once well known in the prize-ring, showed some Chrysanthemums for competition at the Brixton Show the other day, and they were among the best exhibited, his gardener, Mr. Lee, obtaining two of the most important prizes for cut blooms.

Schizostylis coccinea in the Greenhouse.—For greenhouse decoration at this season of the year there is no plant better than this; it is invaluable, too, for room embellishment, used as a "dot" plant in a basket of Ferns. It lasts long in good condition, and its spikes of rich scarlet flowers are shown off to the best advantage when surrounded by Ferns, which form a good substitute for its own somewhat ineffective foliage.—W. W. H.

Billbergia Moreliana.—Specimens of this gorgeously-coloured Bromeliad have been sent to us by Mr. Wheble, of Bulmershe Court, Reading. Its inflorescence is gracefully pendent, and each purplish-blue flower is subtended by a large, broadly lance-shaped, scarlet bract, 4 in. in length. This species of Billbergia was introduced many years ago by Messrs. Veitch, and is well worth culture as a decorative plant. Mr. Wheeler grows numerous plants of it in a warm Vinery.—B.

Conference of Rose Growers.—We understand that a Conference of Rose exhibitors and Rose growers will be held on Thursday, December 7, at the Horticultural Club, 3 and 4, Adelphi Terrace, at 2 p.m., for the purpose of devising some satisfactory arrangement as to the future of Rose shows. Amongst the subjects to be discussed will be the formation of a National Rose Society or Club, an idea which was started at the last Hereford Rose Show; the abolition of two-day Rose shows, and the revival of the National Rose Show, which was merged some years ago in that of the Royal Horticultural Society, and has fallen through. Many rosarians, both amateur and professional, have signified their intention of being present.

Red and other Climbing Greenhouse Roses.—I have cultivated these for many years, and my difficulty has been to get a good red. I therefore want some one to tell me from their own experience, whether they have ever had a good red greenhouse climber—of 20 ft. stem, diameter 1 in.—which would bear good Roses in March and April. The best effort I have yet made was with Souvenir de David, a miserable failure, but with real colour, a Hybrid China, I suppose. For the benefit of others I may say that my experience of greenhouse climbers puts them in the following order of merit:—First, Maréchal Niel, which is the best climber, because all the heads hang down, and the Rose itself is perfect; second, Fortune's Yellow, on account of the wonderful profusion in which its flowers are produced and its extraordinary colours; third, Gloire de Dijon, because it scarcely ever ceases to bloom, but otherwise it is unsatisfactory; fourth, Devoniensis, which is delicate and lovely, but yields but few blooms, which, however, are exquisitely scented; fifth, Duc de Magenta, a good apricot-coloured kind, but an indifferent climber; sixth, Perle de Lyon, which I cannot call a success, as it is a poor climber, but the colour is deep; seventh, Souvenir de David, to which I have already alluded. Of course there are many kinds which I have not tried, and my cultivation may be bad; but I wish to hear of a single case of success with a red not a pink nor a purple, and I don't want a list of names, one being enough for my purpose. —Incredulis.

Bamboos in North Africa and in Europe.—At a recent meeting of the Horticultural Society of France specimens of several different species of Bamboo were exhibited from the Botanic Garden of Hamma, Algeria. Stems of Bambusa nigra upwards of 16 ft. long sprang up in six weeks, while those of B. viridi-glaucescens attained an even greater height during the same period. B. Quilioyi is regarded as one of the most ornamental; it is quite hardy in the climate of Paris. B. Mitis grows from 35 ft. to 50 ft. high in the south of France, and is sufficiently hardy to be very useful. It is reported that Bamboo culture in the south of France is likely to develop into a remunerative industry. M. Rivière asserts growing Bamboos will bear without injury from 18° to 25° of frost.

THE INDOOR GARDEN.

GLORIOSAS AND THEIR CULTURE.

These consist of a limited number of bulbous plants, which bear handsome, distinct, and somewhat singular-looking flowers. They are deciduous, the stems dying down gradually in autumn after flowering, which they generally do in July and August, a time at which they are more useful for conservatory decoration than at any other, coming in, as they do, when there is usually a comparative scarcity of flowers. The peculiar character of their blooms befits them for association with either fine-leaved or ordinary flowering plants. They are especially well adapted for cultivation by those who have not a large amount of stove room, as their roots can be stowed away in winter so as to occupy no more space than those of Gloxinias and similar plants, and they are likewise well suited for exhibition purposes. They are easily managed, and require no special treatment to insure their growing and flowering abundantly. They may be increased by division of the roots in spring, just as they have started into growth, in the same manner as Gloxinias, cutting through the crown with a sharp knife so as to secure to each piece thus divided a bud or shoot. When raised from seeds they should be sown in March in the stove in small, well-drained pots, filled with equal parts of finely-sifted loam, leaf-mould, and sand, covering the seeds slightly, and placing them in a heat of 70°; keep the soil moderately moist, and when the plants make their appearance set them near the light in order to prevent their being drawn up weakly, and as soon as they are fit to handle pot them singly in 3-inch pots in soil similar to that in which the seeds were sown; they will now, if well attended to by giving them the requisite amount of heat, moisture, and shade, make rapid progress; they only require to be slightly protected from the sun's rays during the middle of the day, for if shaded to any great extent, as some plants are, it will weaken them. As their pots get filled with roots move them into larger ones, using the soil for this shift in a more lumpy condition than hitherto, but still containing more sand than would be necessary for the generality of plants, one-fifth not being too much to add to the soil at all times; the most suitable mixture in which to grow them after the bulbs have attained some size is two-thirds good turfy loam and one-third fibrous peat, covering the bulbs about 2 in. They require plenty of water when in active growth, and support the shoots as they extend with some neat sticks, inserted round the outside of the ball. Give a moderate amount of air early in the day, closing the house in good time in the afternoon, syringing overhead at the same time. The coolest end of the stove, or the temperature of an intermediate-house, will answer better for them than hotter treatment, as they will grow in an ordinary greenhouse; but so treated they do not attain the size and vigour which they do when brought on in heat until the flowers are about to open. Plants from seed, if well managed, may be expected to produce a few blooms the first season, but if not allowed to flower they will make better bulbs. As soon as they show signs of their growth stopping in autumn give less water, but do not withhold the supply all at once, or it will have an injurious effect by preventing the bulbs going through their naturally gradual ripening process. When ripe allow the soil to become quite dry, and keep it in that condition all through the winter, laying the pots on their sides in a temperature of from 46° to 50°. In March they may be again started, potting them singly in 4-in. pots in soil such as that recommended for the second shift the preceding summer, using it in a rather dry state and giving little or no water until growth has commenced, as if it gets too wet before the roots have begun to push, there is danger of their rotting. Place them in a heat of from 55° to 65°, when they will soon begin growing, and keep them near the light. As soon as they have made a fair quantity of roots, four or five of the bulbs may be put in a 12-in. pot; in this way, whilst in a comparatively small state, they will make much more effective specimens than if grown singly. When they are about 1 ft. or so high, a wire trellis should be fixed to the pot and the shoots should be kept regularly trained round it. As soon as the soil gets filled with roots they will require supplying liberally with water, and if liquid manure be given once or twice a week, it will assist them considerably. In other respects treat them as recommended for the previous season, and when they begin to open their flowers they should be removed to a cool house, where they will last much longer in bloom than if kept in heat. When the flowering is over, gradually dry them off as before, and if the size of the pots make it objectionable to winter the bulbs in them, they may, when the tops are dead, be taken out and wintered in smaller pots filled with thoroughly dry earth, with which they must be covered to prevent too much shrivelling. If, when the bulbs get large, it is found desirable to increase them by division in the manner stated, it is essential when so treated that they do not receive any water until growth has commenced, and until the cut part has had time to heal, or they will be liable to rot, for the prevention of which mishap surround them with an inch of dry sand at the time of potting. Only two species of Gloriosas are worth growing, viz., the East Indian G. superba, the flowers of which are rich orange tinged with red, reflexed, and crisped on the margins; and G. Planti, the lower petals of which are light yellow, the upper portion of the flower being bright red tinged with orange. Gloriosas suffer but little from insect depredations, their juices not being of a nature to be relished by them.

T. Baines.

Zebra-striped Dragon Tree (Dracæna Goldieana).

ZEBRA-STRIPED DRAGON TREE.

(DRACÆNA GOLDIEANA).

This is one of the most effective of all recently-introduced stove plants, and one which is quite distinct in habit and markings from all the species of Dragon tree now grown in gardens. It was discovered some years ago by Mr. Goldie in Africa, and by him it was sent to the Glasgow Botanic Garden, where it was found by Mr. W. Bull, who holds the stock of it, and by whom it will be distributed. It has been frequently exhibited during the past two years, and has received

many certificates, on account of its being a desirable fine-foliaged plant. Our illustration, made from one of Mr. Bull's plants, shows its habit of growth and the peculiar transverse markings of the foliage. Well-grown specimens of it attain a height of from 2 ft. to 3 ft., the stem being clothed with horizontally-arranged leaves, as shown in the annexed sketch, each leaf with its footstalk being from 10 in. to 14 in. in length. The blade of the leaf is ovate in form, with an undulated margin, and is about 6 in. in breadth at its widest part. The ground colour of the foliage is dark green, a colour which sets off the silvery-grey bars and marbled spots to excellent advantage. The plant is readily propagated either by means of cuttings or layers, which grow freely in a rich, open compost, consisting of fibrous peat, leaf-mould, and sand, with which should be mixed a sufficient quantity of coarse sandstone grit to keep the whole porous. Good drainage is essentially necessary if successful culture be aimed at, and when the plant is growing freely it should have a copious supply of tepid water. B.

INDOOR CLIMBERS PLANTED OUT.

There can be no doubt that, in order to grow stove and greenhouse climbers successfully and as they ought to be, they must be planted out and have sufficient head room. A glorious stove climber grown in a pot, and twisted round a few stakes or supports, is a mere abortion compared with one planted out and growing freely under the roof of the house. Under such conditions they grow without trouble comparatively, and yield hundreds instead of dozens of flowers, from which one can cut, if desirable, without sensibly robbing the plant. The following hints on this plan of growing climbers and selection of kinds will, perhaps, meet the wants of some of your readers:—

Tacsonia Van Volxemi (greenhouse or intermediate-house).—It is needless trying to grow this plant in a pot, owing to its rampant habit of growth and the way in which it carries its flowers. Not long ago we saw a conservatory some 50 ft. wide and 100 ft. long, the horizontal roof of which was completely covered with its great, crimson, star-shaped flowers hanging down in every direction; and we were told that it continued in flower all the year round. The house was kept at 50° in winter, and like a greenhouse in summer. Two plants were planted out in the bed in good soil, and they covered the extensive roof in about two years. A greenhouse rafter does not afford the necessary scope, unless the roots are pretty well confined. Any ordinary good soil will suit it, and the less it is pruned the better. So far as we have seen, it is little troubled with any kind of insect or disease. Mealy bug we have seen on the old T. mollissima, but never on the variety in question.

Lapageria rosea and alba.—The Lapageria is seldom seen in such condition as it should be, although it is one of the easiest-grown climbers with which we are acquainted. We are about to devote the greater part of the roof of a cool division, 30 ft. long, to the two varieties, and expect they will nearly fill the allotted space next summer; but we have good plants to begin with. The red one, in fact, though in an unfavourable place at present, has made some hundreds of feet of young shoots altogether since it was cut down in spring. It requires a cool, moist soil, and a perfectly cold house, in which the shoots should be trained close to the glass, where they will flower their whole length. The best plan is to stretch wires 4 in. or 5 in. apart for it, in the direction in which the shoots are to be led, and they should be allowed to follow the wires themselves, which they will do—twisting along as neatly as possible—without the least assistance, except that when more than one shoot is allowed to a wire care must be taken to prevent the leaves being caught in the twists. To attempt training the shoots by ties is troublesome, and not a successful plan. Stopping the shoots occasionally induces flowers to come sooner than they otherwise would, and produces little spurs, each of which furnishes several flowers. The beautiful white variety is likely to become a great favourite for various purposes, and we would recommend those who have it to plant it out at once, however small their plants may be, in a compost of peat, loam, and plenty of sand, with a little rotten manure, and to give it room and light, keeping the soil about the roots rather wet than dry. Our large plant which grows so rampantly every year, though it does not flower so freely, owing to the shade over it, has never been otherwise than wet at the root for three years, on account of the drip from the other pots, and yet it is in fine health, and still growing rapidly. The Lapageria makes a disproportionate quantity of large thick roots, considering its habit and growth, though the shoots of established plants are sometimes as thick as small pot Vines.

Marechal Niel Rose.—This ranks among the very foremost of greenhouse climbers, and not a few want large plants of it now if they could be had. A word of caution to those who have to deal with old plants. We bought one, for which £5 was paid; it had some hundreds of feet of wood upon it, which was reduced by one half or more, and the plant was lifted and planted with great care; but it died, as a good Rose grower predicted who saw it when just planted, and who recommended the cutting of it nearly down to the stock. Our object, however, was to get flowers early, while younger plants were coming on, and hence we risked it.

Acacia Riceana (cool greenhouse).—This excellent climber should have a place wherever half-a-dozen sorts are planted. We have one of the oldest trees of it in the country, which long since got into an uncomfortable position against the glass, where it frequently experiences a temperature of 32° every winter without injury. A young seedling planted three years ago in another house is now about 20 ft. high. The best position for it is under the apex of a span roof, where it can be carried along horizontally, and where the long, pendulous, flowering shoots, can hang down without coming in contact with anything else. The shoots when cut for decorative purposes last a long while, and they can be looped and twisted about in any fashion without breaking. It requires the same soil as the Tacsonia, and should not be kept too wet at the root. Midwinter is its season of flowering (if assisted with a little heat, but very little), and it continues in flower for a long time.

Mandevilla suaveolens.—Though this species is reckoned among half-hardy evergreen climbers, it requires a greenhouse, and perhaps thrives best of all in an intermediate-house, at least in the North. In such quarters, and when planted out in the bed or in a compartment of brick, and well-drained, it grows at a great pace, and flowers profusely along the shoots. In the extreme south of England we have seen it doing well in the coldest house, with its roots in an outside border, but in the north of England, and in Scotland, we never saw it in perfection, except in a warm greenhouse. During growth the shoots twist like those of a Lapageria, and are apt to run into bundles if not guided, but if a few wires or strings be provided for them they will take care of themselves. It will succeed in equal parts of loam, peat, and sand, but if it have room, light, and the necessary temperature, it is not particular as to soil, so long as it is not too close or heavy. It is subject to red spider, but is seldom troubled with that pest when planted out. If allowed plenty of room to ramble, pruning or cutting back will hardly be needful, except when it is found necessary to originate back shoots; but when the plant is restricted to one rafter or a small area, it may be cut back without fear to keep it within bounds.

Plumbago capensis.—The beautiful azure flowers of this Plumbago are exceedingly useful for cutting; in fact, we have hardly anything else like it in that way, and it is all the more valuable because it comes now—or sooner, according to treatment—and continues to flower for a long time during the dreary portion of the year. In pots the season of flowering may be extended considerably. It is classed among greenhouse climbers; but it should have the warmest and the lightest corner which can be spared for it, otherwise, though it will grow tolerably well during the summer, it will not flower so freely. This was our experience with it when at one time we had a large bush of it in a cold house. Not being a very luxuriant grower, it may be trained up a rafter of the greenhouse or conservatory, not too near the glass, and allowed to assume a somewhat bushy form. A light rich compost of peat, loam, and sand, with annual top-dressings of rotten cow-manure, will be found to suit it; but the plant is easily injured when at rest by overwatering, and this must be provided against by plenty of drainage. When done flowering, water should be sparingly given till spring, when the supply may be increased gradually with returning growth. Pruning should be performed in early spring before growth commences, and consists in simply shortening in the straggling shoots a little, so as to keep the plant in a tolerably compact state. A little tying in will also be necessary in summer. When in a healthy state, this Plumbago flowers most profusely.

Cobæa scandens.—Among greenhouse climbers this is a never-failing subject. We have known it to grow rampantly amid gas-burners and lamps in a very unfavourably-placed London conservatory, where all else refused to thrive permanently. A dozen other plants were tried more than once for the sake of variety, but all succumbed eventually, the Cobæa being left to itself, and in a short time it covered the entire roof like a net-work, being methodically trained and cared for, in order to prevent the shoots getting entangled. The variegated variety is the most handsome, but both varieties are excellent free-growing subjects for forming screens or covering roofs and walls, and it will grow in almost any soil.

Ficus repens.—This creeping plant is pretty, very useful for covering walls where nothing else can be conveniently grown, such as the side walls of paths and low gables, &c. Once planted, and a fair start obtained, it takes care of itself and soon spreads, covering the surface with its neat green foliage. It succeeds also in a stove or intermediate-house.

Dipladenias.—These rank amongst the foremost of stove climbers. They are great favourites with exhibitors, who grow them well in pots; but when planted out in a bed, and in a genial bottom-heat, any one may grow them to perfection if pains be taken to train them and keep them clean, in both which respects they are less troublesome than when grown in pots. Good, turfy loam, peat, leaf-mould, and sand, and a little bone-dust make an excellent compost for them. A trough, about 2 ft. square, should be bricked off in the stove bed, and to this their roots should be confined; but provision must be made for turning off the bottom-heat from the beginning of November till February, when the plants may be started. Some cultivators start their plants much sooner than this, to have them in bloom early; but the beginning of February is soon enough for permanent climbers, and they then make their growth during the best season of the year, and are consequently more vigorous in every way. The shoots grow fast, and should be trained to wires 6 in. apart, and 1 ft. from the glass, and either tied in as they grow, or allowed to twist along in their own fashion, at the same time leading the shoots on systematically, and taking care that they do not become too crowded. Young plants newly planted out must be carefully watered at first, to avoid souring the soil, and other pot plants should not be set on the soil, for the same reason; but when the trough is pretty well filled with roots, and the plant is growing freely, abundant waterings should be given; in fact, the roots should never be allowed to suffer in the least for want of water, but rather be kept on the moist side. Treated thus, with a bottom-heat of 80°, and copious syringings every fine afternoon, and a genially moist, stove temperature, insects are hardly ever troublesome. The flowers will appear about the end of June, or a little later, and continue to be produced for a considerable time. The health of all real stove climbers, indeed, depends upon a sweet, moist atmosphere and a high temperature. From the time they are started they should be grown on with a rush till the days begin to shorten sensibly, and by November bottom-heat should be withdrawn, and a lower top-heat given as well. After the first year the roots will only want top-dressing annually with some rich compost similar to that recommended above; but when the trough gets crammed with roots, well-rotted cow-manure may be applied liberally, always of course removing effete soil from the surface before applying more. It is a common practice to plant the climbers out in the general bed of the stove, when there happens to be a soil-bed inside, and such a practice is well enough when the climbers have unlimited head room; but when each is restricted to a light or two, the roots must also be confined. It is then known where they are, and they can be treated as one likes; there is no danger of the plants getting exhausted if liberal top-dressings be given. We have known the Passiflora edulis confined to a box 18 in. square for many years, yet it grew with unabated vigour annually, right to the end of a house some 40 ft. long, and always bore an abundant crop of fruit. The box was completely crammed with roots, and they were not allowed to run out into the Pine-bed in which they were plunged, so that they must have subsisted on the top-dressings alone, and the copious waterings, which had often to be given twice a day. The Passiflora quadrangularis we had for several years in a 16-in. pot, and it always more than filled the space, 30 ft. by 4 ft., every season, and bore quantities of fruit averaging ½ lb. each. Another advantage of confining climbers to a limited rooting space is that it makes them flower more freely, root restriction having the same effect upon them as upon all other subjects. The best varieties of the Dipladenia are D. amabilis, amœna, splendens, Boliviensis, and Brearleyana; the last is probably the best, and, treated as we have described, it appears to be a most free grower.

Allamanda.—This plant requires the same treatment as regards soil and temperature, &c., as the Dipladenia; but, owing to its habit of growth, it must be trained and tied in as it grows. Pot specimens have to be cut back and pruned, and considerable trouble is experienced in keeping the plants within bounds to suit exigencies; but when planted out it is only needful to afford space and light, and pruning, except with the object of getting back breaks when the stems may get bare, is seldom necessary. With its roots in the bed, however, growth is very rampant, and flowers are not so abundant; but when confined as before suggested, it flowers with the utmost profusion. Bottom-heat it delights in; a small stump in a 4-in. pot, which was transferred to a 14-in. pot in the spring, and in June plunged in its permanent quarters in a stove, where it had a constant bottom-heat of from 75° to 85° till November, grew rapidly, and burst into a sheet of flowers as soon as the pot was tolerably filled with roots; and, though the bottom-heat has been turned off since the end of October, it still continues to flower profusely, and at the present time there are from seven to nine flowers or flower-buds at every joint. Plants should be allowed to go to rest from October till February, however, in order that they may start vigorously in spring, and bear pushing on rapidly afterwards. Under these circumstances the Allamanda does not seem to be much, if at all, troubled with insects, and the wood and foliage are of that texture and dark green colour which denote high health, and the flowers are large and of good substance; with us A. Hendersoni produced flowers 5½ in. across. When we stated that not much pruning was necessary, it was not, of course, meant that the knife was not to be used; on the contrary, shoots must be removed at any time wherever they become too crowded, and the best plan is to remove such entirely, cutting them clean out at their point of origin.

Clerodendron Balfouri.—This is one of the most useful and ornamental climbers either for the stove or intermediate-house, and the flowers, which are sure to be produced in basketfuls are particularly excellent for cutting—even after the blossoms proper have fallen off—the white calyx of the flower being the most effective part of it, and by far the most lasting. The Clerodendrons are strong growers, and succeed well in a compost consisting of two-thirds of turfy loam and one-third of good peat, with a quantity of sand if the loam be heavy, and in any case a little well-rotted manure of some kind. But room to extend and position close to the glass are of more importance than the compost, and the roots must also be kept within bounds, like those of the other subjects mentioned. Should a young plant be started early in January or February, and pushed on, like the Allamanda or Dipladenia, in a high temperature, it will flower freely the same season, and well through the winter if the temperature be sustained. The flowering shoots are produced from the axils of the leaves when the wood gets tolerably matured, so that a shoot which is still growing fast at the point will begin flowering at its base, and continue to produce flowers along its whole length. Spring and summer are, however, the seasons when the flowers are produced naturally and in perfection, after the plant has rested during the winter. Owing to its rapid growth, and sometimes through want of attention, the plant becomes a perfect thicket of wood, the disposal of which is a puzzle to the cultivator, but which might easily have been prevented by methodical training. We cannot recommend a better plan than the long-rod system, the same as that applied to the Vine. This consists of training the shoots singly, or in pairs at the most, along wires 9 in. apart—a flowering shoot and a successional one—and cutting the flowering shoot back to its base annually when it has discontinued blooming, and from which the next successional shoot will be produced the following year. In this way an orderly succession of flowers may be kept up from a plant of moderate size, provided the roots be kept also within bounds. From 50° to 55° is a safe winter temperature for the Clerodendron, with a very limited supply of water at the root.

Stephanotis floribunda.—With this species we have enumerated some of the best stove climbers that can be grown, but none are more admired than the Stephanotis, and it deserves attention wherever there is room for it. Pot plants are nothing compared with a good climbing specimen, yielding flowers in abundance both large and fine. Good loam and peat in equal quantities, and plenty of sand, make the proper compost for it. A bottom-heat from 75° to 80° is high enough, good drainage is essential, and plenty of water at the root during the growing season, but not much in winter. The shoots will grow to an enormous length if allowed, and as it breaks freely there is never any difficulty in keeping the wires furnished from top to bottom. To keep the shoots clean and free from mealy bug, its worst enemy, not more than two or three should be trained to one wire, and the wires should be 5 in. or 6 in. apart, and within 8 in. of the glass. The only way to keep down mealy bug is by vigorous syringing, so as to never let it obtain a peaceable footing, and attention with the brush to prevent the enemy clustering in about the axils of the leaves. In a stove the flowers continue to be produced for a period of six weeks or two months, but by having a plant in an intermediate-house also the blooming season may be prolonged considerably. None of the species here treated of require shade in summer provided the ventilation be sufficient; but when the stove has to be shaded for the sake of its other inmates, the climbers will suffer no injury if the shading be not too thick nor used oftener than required.—"Field."

Rivina humilis as a Table Plant.—Permit me to add my testimony to that of Mr. Groom in favour of this little gem of a plant. I have been acquainted with it for more than thirty years, but some twelve months back, happening to visit Arundel, I saw it in much better condition than usual. Well pinched in, and grown in the manner recommended by Mr. Groom, it it is one of the most charming decorative plants which any one can possess.—R. Gilbert, *Burghley*.

THE KITCHEN GARDEN.

RADISHES, THEIR CULTURE AND VARIETIES.

For our first Radishes we were indebted to China, whence they were introduced into this country about the fifteenth century. Their value was at once recognised, and they soon spread over all parts of the country, until even the smallest cottage garden had its bed of Radishes. A warm, moist soil suits them best, but they may be grown in any ordinary garden soil. Sowings may be made from February to December, but both early and late crops must have the warmest border available, and be protected during severe weather, whilst summer crops may be advantageously grown in any shady position. The seed is generally sown broadcast, and the seedlings thinned out when large enough to handle. These thinnings, when washed, make an excellent salad, and are by many preferred to the root. From April until September sowings may be made every ten or twelve days, *i.e.*, if a continuous supply be needed. To have Radishes in the best possible condition they must be grown quickly, and to do this, frequent waterings during dry weather must be given them, otherwise by the time the roots are of a usable size they will generally be pithy and ill-flavoured. Small sowings in quick succession are, therefore, preferable to large ones made at long intervals apart. Where Radishes are forced, the seed is generally sown on hotbeds between rows of Potatoes, Carrots, &c.; or where there is plenty of accommodation, they may be allowed to occupy frames by themselves; the former plan is, however, a good one, and the Radishes are not detrimental to the other crops, being used before they have attained a sufficient size to be injured by them. In this case the seed is sown in drills, and the seedlings, when large enough to handle, are thinned out to distances of about 1 in. apart. Frequent waterings and weedings are all that is necessary after the plants have been thinned. Radishes may also be successfully forced by sowing the seed in large boxes filled with light, rich soil, and placed in warm houses or pits. As regards varieties, they are now numerous, those most in use being the Turnip-rooted kinds (for forcing and early crops out-of-doors), the Long-rooted sorts, such as Wood's Early Frame and Early Scarlet Frame, Scarlet Short Top, &c. These are all good in flavour, and bright scarlet, a colour which renders them more valuable than the purple and white kinds, which are only fit for growing for their leaves, which are large and tender. The Turnip-rooted kinds are most suitable for summer use; there are several varieties which, however, differ but very slightly from one another except in colour; there are scarlet, white, rose-coloured, and purple, the two former being the kinds generally grown. The black and white Spanis are grown for winter use, these sorts being much more hardy than other kinds, but they are inferior in quality, being large, hard, and hot. M. Lille, a seed merchant of Lyons, has sent out a new Japanese Radish. It is called the Daïcon, a plant cultivated in all parts of Japan. It appears that its roots often reach nearly 1 yard in length and 1 ft. in diameter. The colour is a milky white, tinged with yellow; the very thin skin is easily removed, and the compact, juicy flesh has the delicate flavour of our best small Radishes. M. Jean Sisley, who obtained seeds of the Daïcon from Dr. Henon, states, in an article in the "Cultivateur Lyonnais," that another esteemed variety, the Satsuma Radish, has not yet been introduced, but deserves to be. In Japan they are prepared for the table in various ways—baked, sliced very thin in salads, or preserved in salt. In the latter form it is used to season boiled rice. No doubt these Radishes are allied to the large and tender Chinese Radish, which Chinamen cultivate so much, both when at home and in other lands.

The only Radishes grown in the market gardens about London are the red Turnip and Salmon (a long-rooted kind), and the white varieties of both these sorts; but the majority are red. These constitute the principal winter crops in the market gardens, the first coming in in the first or second week in December, the second three weeks later, the third in the second or third week in January, and others from that time till the end of March or middle of April, an interval of about three weeks elapsing between each succession. The empty space at command, the character of the season, the succeeding crops, and other circumstances determine the number and extent of the Radish plantations. Where a great extent of land can be cleared and sown at one time, the sowings are fewer than when only a small space can be cropped, and where, on an average, four or five successive plantations constitute the number grown. Radishes do not grow well in summer, the weather being then too dry and parching for them; but in a moist season, they may be grown even in summer with advantage. If the weather be moist, a sowing is made in August on a cool piece of ground, and another a fortnight or three weeks afterwards. Radishes are usually grown on ground that has just been cleared from Vegetable Marrows, French Beans, Seakale, Rhubarb, or Celery. The first two crops are usually grown under fruit trees; by sowing time the trees are leafless, and whatever pruning they may have required will have been given them; they therefore do not shade the plants, but, on the contrary, shelter them a little, and before the leaves begin to grow in spring the Radishes are marketed. The ground, after having been dug or trenched, and manured if necessary, is lined off into 4-ft. or 5-ft. wide beds, having 1-ft. alleys between them. The seeds are then sown, raked in with wooken rakes and also slightly covered from the alleys, and rolled. About 3 in. in depth of rank litter are then strewed over the beds, and left there until the seedlings appear, when, if the weather be fine and not very frosty, they are uncovered during the daytime and covered at night; but during hard, frosty, and snowy weather, they are kept covered, even during the daytime. All the sowings are treated in the same manner as regards covering and uncovering; and, after the middle of February, if the plants be strong and the weather mild, the coverings are dispensed with, but kept in the alleys in case of emergency. Radishes, in their rough leaves, will stand a few degrees of frost with impunity, if the ground be not very wet. In April, the litter used in covering is removed and built into a large stack, to be converted into manure. The March and April sowings require no covering. Birds are very destructive to Radishes from the time of sowing until the plants have made rough leaves: they eagerly devour the seeds before they germinate, and look after the husks after the seedlings appear, pulling up the young plants to effect their purpose. In order to counteract this mischief, boys are kept to watch and scare away the birds. In March the first outdoor Radishes are fit for market, the largest being pulled up first, leaving the others for a week or two later, in order that they also may become marketable. When drawn they are tied into little bundles, bound round with a withie, or piece of bast, washed after being bunched, and packed into baskets for market. After Radishes, may be planted Seakale and Lettuces, Cauliflower and Lettuces, preparations being made for Celery, Beet, Vegetable Marrows, French Beans, or any other crop suitable for the situation. Autumn Radishes are treated in the same way as those for spring use; but, as has been stated, the litter coverings are not used except in the case of hot, dry weather. When Radishes are wanted earlier than those of the December outdoor sowings, they are obtained from gentle hot-beds, made up about the 1st of January. These hot-beds are of two kinds—one the common frame hot-bed, the manure being in sunk trenches; and the other merely a sunk bed of manure, covered with a few inches of soil, and mulched over, like the outdoor beds. S.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Varieties of Potatoes.—At the Philadelphia Potato Show Dr. Hexamer, the well-known hybridizer, furnished a collection of 509 varieties, all correctly named; Messrs. Bliss, 387 varieties; the Agricultural College of Lansing, Michigan, 253 kinds; and Iowa, 60 kinds.

The Green Prolific Cucumber.—This for pickling is very highly praised by Dr. Hexamer, who states:—I know of 15 acres of Green Prolific, grown in Virginia, which gave better results to the growers than were obtained from any other variety. I can give an instance in which 443,529 Green Prolific Pickles were grown on 2 acres, another in which 125,055 were grown on half an acre, and another of 492,550 on 2½ acres; not by "arithmetical computation," but by actual count of the Cucumbers picked.—"Moore's Rural." [We are not aware if this variety be in our gardens: it would seem to deserve a trial.]

Heavy Vegetables.—Six Leeks blanched not less than 6 in. and weighing 18 lb., were shown the other day at a meeting of the Peebles Leek Club, at which the heaviest Leek, blanched to the same extent, weighed 4 lb. 3½ oz. Several other kinds of vegetables were exhibited, including six Onions, weighing 8 lb. 5 oz., and a Cabbage of the weight of 22 lb. 9 oz.

NEW PLANTS, &c.

MASDEVALLIA IONOCHARIS.

This, a rather pretty, though not showy Peruvian species, produces dense tufts of solitary flowers, and foliage from 5 in. to 6 in. in height. The leaves are dark green and leathery in consistence; the flowers, which are hooded, are about ½ in. in diameter, white in colour, blotched with lilac-purple, the

Masdevallia ionocharis.

base of the thick tube being suffused with yellow behind. It was introduced by Messrs. Veitch through their collector Mr. Davis, and it flowers freely during autumn. The engraving shows the leafage and flowers (natural size).—"Bot. Mag.," t. 6262.

ODONTOGLOSSUM LÆVE.

This is a showy plant, and one of the earliest introduced species in the genus, having been sent from Guatemala long

Odontoglossum læve.

ago by Mr. Skinner to the Royal Horticultural Society's Gardens, in which it bloomed in 1842. Its nearest allies are O. Karwinskii (which, in Lindley's "Sertum Orchidaceæ," t. 20, was referred to Oncidium) and Odontoglossum Reichenheimi, a plant not uncommon in good collections, and which indeed differs but little from the plant now under notice. O. læve has large and distinctly-fluted pseudo-bulbs, like those of O. hastilabium, each bearing two leaves; but the most distinctive character of the plant, and one which at once distinguishes it from its congeners is the peculiarly flattened nature of the inflorescence, which is about 2 ft. in length, and has several branches on either side arranged in a rigid fan-like manner. From fifty to a hundred flowers are often borne on strong spikes. The accompanying illustration shows the natural size of the flower, and a reduced view of the bulbs and leaves. The sepals and petals are of greenish-yellow barred with rich chocolate-brown. The column and lip are white, the latter having a broad belt of lilac-purple across the centre extending from the white five-lobed crest to the middle of the lip. A plant of this has flowered in the Kew collection for several years past, and a good coloured figure of it is published in the "Botanical Magazine," t. 6265.

ANTHURIUM BAKERI.

This plant, which is one of the most beautiful of nearly two hundred species of which the genus consists, is a native of Costa Rica

Anthurium Bakeri.

whence it was imported by Mr. Bull, who sent it to Kew, where it first bloomed in 1872, and where it was named A. Bakeri, in compliment to Mr. J. G. Baker, a gentleman connected with the Kew Herbarium. In habit it somewhat resembles A. Scherzerianum, but its spathes are of a greenish colour and inconspicuous, the whole beauty of the plant consisting in its handsome, bright green, leathery foliage and scarlet fruit, the last being densely arranged on a spike 5 in. or 6 in. in length. The annexed engraving shows a reduced view of the plant's habit, flowers, and fruit. An excellent coloured drawing of it is given at t. 6261 of the "Botanical Magazine." If this Anthurium produce its fruit freely, it will certainly prove well worthy of cultivation as a decorative stove plant. B.

Epiphyllums as Rock Plants.—These beautiful winter-flowering plants are greatly improved when raised considerably above the line of sight. We have several large plants of them that occupy the sunniest and most exposed position of an ornamental rockwork in a warm conservatory, where they are now beautiful objects; their blossoms rest upon the projecting boulders, and the confined root-space given them suits them admirably.—J. Groom.

Stocks for Aralias.—What is the best stock on which to graft these fine-leaved plants?—S. [A. reticulata makes a good stock, but the best of all stocks for rare kinds is A. Scheffiera.]

COTTAGE GARDENING.

Onions.

Manure and trench the land in autumn or winter; if heavy' throw it into ridges, but if light, leave it flat. In February spread over the surface of the beds about 3 in. of thoroughly decayed manure or rich compost, including the charred refuse from the rubbish-heap; fork it lightly in, so as to mix it with the surface-soil. In March, when the surface is dry, tread all firm, rake level, and draw drills 1 in. deep and 8 in. or 9 in. apart, or more if large bulbs of Onions be required. Sow the seeds evenly and thinly; tread them in, and draw the back of the rake over all leaving a level surface. As soon as the young plants appear, choose a fine day to stir the soil amongst them, and follow this up as often as time can be spared during the growing season. When large enough thin out to 3 in. or 4 in. apart; this should be done in showery weather, as they come up better and without disturbing the roots of those intended for the main crop. Salt in small quantities is an excellent stimulant for Onions, especially for a dry soil; soot, also, is very beneficial when applied to the land in spring, or as a top-dressing to the crop during its early growth. The season of growth of the Onion, especially when sown in spring, is short; therefore, everything should be done to prevent the crop receiving a check when the plants are young. Sprinklings of artificial manure in the majority of seasons will well repay for the outlay and labour. It is when a check comes from sudden drought, or any other cause, that Onion maggots are usually so difficult to be dealt with. If by high culture continuous growth can be secured till the bulbs ripen off naturally, the maggots will not do much injury. In August or as soon as the tops die down—and it is a good plan to assist the maturing of the bulbs by bending the tops—pull them up and lay them on a hard surface to dry, turning them over occasionally; and, when thoroughly harvested, tie them in ropes or bunches and hang them in some dry, cool, well-ventilated place, as frost does not injure them. In all inferior or difficult soils, sow in August, about the second or third week, on a dry open piece of ground; keep them free from weeds during autumn, and transplant early in February on to land prepared as recommended for spring-sown Onions. In this way very fine bulbs are invariably obtained. The truth is, that Onions require a longer season of growth than can usually be had in our climate. Drought too often checks growth and dwarfs the produce, hence the advantage of sowing in autumn to give an early start. The sorts commonly sown in autumn are the various forms of Tripoli; but it is by no means necessary to confine ourselves to these kinds alone, as the Spanish, Globe, and other better-keeping kinds will do equally well if sown in autumn; and, if the main sowing be made at that time, it is important for a portion of the crop to be of the best-keeping kinds.

Leeks.

Sow in February or March in drills 15 in. apart, and when the young plants are large enough, thin out to 6 in. in the rows and plant the thinnings elsewhere the same distances apart, or sow the seeds on a small bed broadcast and transplant when large enough. If very large Leeks be required, open trenches the width of the spade and 15 in. deep, place 6 in. of rotten manure on the bottom, return part of the soil, and plant the Leeks at the distances apart already given. Onions do best in a firm soil, but Leeks, as may be readily supposed, succeed better in a soil comparatively loose, as the roots at once strike downwards, whilst the loose upper soil offers no obstacle to the rapid growth of the succulent stems. I have seen very good Leeks grown by simply making large holes with the dibble, dropping the plants in so that the roots rest on the bottoms of the holes with a few of the finer particles of soil just sufficient to cover the young roots at the bottom pushed into the hole, not applying any pressure. Of course in time, what with hoeing and the natural action of the weather, the holes get filled up, but the soil round the stems of the plants does not set so hard as if the Leeks had been planted in the ordinary way; and as the season advances and the plants gather strength, the gradual earthing up blanches the stems and renders them more delicate in flavour, and in this way a much larger proportion of them is usable. This gradual earthing up may be continued through the growing season by drawing the loose particles of surface-soil up round the stems occasionally with a hoe, in the same way that Potatoes or other vegetables are usually earthed up. Leeks are deserving of far more attention than they usually receive in small gardens, this lack of attention being probably due to want of knowledge of their wholesomeness, either when cooked as a vegetable simply or in combination with other things; and if well grown, there are but few crops that will yield a greater weight of produce from a given quantity of land. It is only by a frequent reiteration of such statements that we may hope finally to secure the attention and co-operation of those most interested in them.

Shallots.

As regards the preparation of the land, Shallots require the same attention as Onions. The position should be open and fully exposed, and if the soil be light and dry plant in October or November, but if heavy and retentive delay the planting till February or March. Some cultivators plant the smallest and weakest bulbs, but a better result is obtained when fair-sized, sound bulbs are used. Plant in rows 1 ft. apart and 6 in. between in the rows. A very good plan to adopt in planting is to stretch the line along the bed, press the base of the bulbs somewhat firmly into the ground 6 in. apart, and when all are planted place a little mound of light, rich compost—of which charred vegetable refuse forms a part—over each bulb; one handful is sufficient for each, and it involves very little extra labour, being quickly done. It prevents the roots when they start from lifting the base of the bulb out of the earth, and as the season advances it crumbles down and forms close at hand a rich store of food for pushing on growth. Were it not for this plan of covering, the bulbs would in many cases require deeper planting, and in the majority of soils and seasons Shallots do better on the surface of the ground. Harvesting is a simple matter: when the tops die down take up the roots and place them on some hard, dry surface, fully exposed for ten days or a fortnight, turning them daily; afterwards store them in some dry, cool place.

Beet.

This is another root that is too seldom found in small gardens. A very small space would produce a sufficient number of roots to form a very agreeable change with the condiments usually available in a small household. Sow in drills about the middle or end of April; the drills should be about 1½ in. deep and 12 in. apart, covering the seeds carefully and drawing the back of the rake over all in order to make the surface of the soil level. When the young plants appear thin them out to 8 in. or 9 in. apart, as medium-sized, or even rather small roots are preferable to those of a larger size for all uses for which they are applicable. They must be carefully lifted in October before severe frost sets in, and the roots must not be broken or bruised during the operation. They keep best stored in pits like Potatoes, a few only being taken out as required. The Pine-apple and Dimmick's Nonpareil are two of the best kinds for domestic use; the latter is a rather small, but elegantly-shaped root, of a pure stock, good both in colour and flavour.

Rhubarb.

Few cultivated plants have advanced so generally in popular esteem during the last twenty or thirty years as this. If treated liberally a very few roots will yield sufficient to make tarts and puddings for a family through the spring and early summer months until Gooseberries are ready, and the surplus produce afterwards will make an excellent preserve, or may be converted into a very wholesome effervescing beverage. It is one of the easiest plants to force, and with a very little trouble it may be had in season all the winter. Take up a few of the roots and place them in any position where a little artificial heat can be obtained in the same way as recommended for Seakale. Young roots of two or three years' growth force best; older roots will do, but they should be lifted as carefully as possible, and not cut about with the view of making them smaller, or the object sought after may be defeated. Rhubarb may be increased either by seeds

or division of the roots; the latter plan, where only a few roots are required, is that most generally adopted. Plant in deep rich soil 4 ft. apart each way, and during the growing season, if fine stalks be desired, frequent applications of liquid manure will be very beneficial. It is not advisable to allow Rhubarb plants to remain too long on one plot of land, as the number of eyes increase rapidly, and, as a consequence, the stalks, although numerous, are weakly and poor for want of room for development, no matter how well the roots may be fed. The best plan is to divide and replant a few roots every year if fine produce be wished for; or, if any roots be taken up for forcing, if not too much exhausted, they may be divided and planted in spring. As bearing directly upon early, vigorous growth, late or close pulling must be especially guarded against, as the plants must be allowed to carry to the end of the season a fair amount of foliage, in order to develop the eyes for next year's crop. When it is not convenient to force any portion of the roots, the early produce may be hastened by placing a forkful of rather long, half-decayed, littery manure over each stool shortly after the leaves die down in autumn. This mulching alone, I have proved, will make the difference of a fortnight in the time for the first gathering in spring. One of the best kinds to grow for general produce is the Victoria, as, although it does not come in quite so early as some other kinds, it bears so abundantly as to compensate for being a few days later than some of the small early kinds.

E. Hobday.

Cures for the Carrot Maggot.—For many years past we have found it impossible to grow Carrots satisfactorily in the garden. They came up well, but were soon totally destroyed by the maggot. Many remedies have been tried, but without success. This season I got the gardener to try McDougall's Sheep Dip, which has succeeded perfectly, and we have had as fine a crop of Carrots as could be desired. The method adopted in using the Dip was to dissolve a 6-lb. canister in about 40 gallons of water and to moisten the ground well with the solution before sowing, giving an extra watering to the drills where the seed was to be sown. McDougall's Disinfecting Powder also answered well. I tried it for Potatoes, Cauliflower, Cabbage, &c. Though the Potatoes were not free from disease, they were very much better than has been the case for many years. The Cauliflowers, &c., were perfectly free from maggot and grub, with which we have been much annoyed. About 1 lb. of the Disinfecting Powder was used to a square yard of land, scattered on the top some weeks before planting and raked in.—P. D., *Cargen, Dumfries.* [The principal ingredient in McDougall's Sheep Dip and Disinfecting Powder is, we believe, carbolic acid, which is an efficient insecticide in many cases.]

Winter Lettuces (see p. 485).—To sow Lettuces in frames, and pull up the large-sized ones for salad, must be something like using tissue paper upon which to write. It is a well-known fact that all salad materials should be crisp; and what crispness is there in a seedling Lettuce leaf? Surely glass lights might be made to answer a better purpose than that in question. I grow Lettuces outside without any glass whatever as follows:—I sow the seed on July 15, and plant out the young Lettuce plants on good, rich soil, in open quarters. When the first frost comes I give them a slight covering of dry Fern, and in this manner I am enabled to cut Lettuces daily until next March. The variety which I employ is the Black-seeded Brown Cos. I have supplied this Lettuce in January perfectly blanched, crisp, and otherwise in fine condition.—R. Gilbert, *Burghley.*

White Broccoli Culture in France.—This Broccoli, which is often wrongly termed Cauliflower, is cultivated in great quantities at Roscoff, on the French sea-board of the English Channel, where it is represented by many fine varieties, every cultivator having one of his own. Independently of the form and whiteness of the heads, however, the Roscoff gardeners seek above all things precocity, to which they devote particular attention. The Broccoli seeds are sown in April, and the young plants are pricked out in either a seed-bed or permanently till July, mostly among Onions or Potatoes, so that the plants may profit by the attention bestowed on them. The Roscoffites understand mixed cropping, and almost always put several kinds of vegetables in the same bed together. We should observe, however, that this mixing of crops together has limits, to exceed which is no advantage.

The Lentil Bean.—Can you tell me the botanical name of the Lentil Bean or Pea used in Revalenta Arabica, and where it may be obtained?—Thomas Acton. [Ervum Lens: it is sold at Gaine's in Covent Garden. An orange-coloured variety (Chinese) is sometimes sold in shops dealing in Chinese products. The Lentil Bean is figured in The Garden for Oct. 16, 1875, Vol. VIII., p. 333.]

TREES AND SHRUBS.

TWO NEW VARIETIES OF FLOWERING ASH.

The tree known as the Manna or Flowering Ash was separated from the genus Fraxinus by the botanist Persoon, and formed into the genus Ornus, the members of which are distinguished from the Ashes proper partly by their general appearance, but more particularly by their inflorescence. The common species, the Fraxinus Ornus of Linnæus, and the Ornus europæa of Persoon, is an ornamental tree of great merit, which deserves to figure in our parks, gardens, and squares much more frequently than it does. These two new varieties of Manna Ash are the Ornus serotina alba and Ornus serotina violascens. The first, according to the "Revue Horticole," forms a bushy shrub, bearing an abundance of flowers. From the beginning of June every shoot bears light, compact, upright panicles, which continue in perfection for a long time. The flowers, which generally make their appearance in large quantities about the middle of June, are pleasantly perfumed and of a pure white, the stamens having yellow anthers, which speedily turn to a rich blackish-brown. The second variety, Ornus serotina violascens, closely resembles its congener in its general habit and mode of growth,

Bloom of Flowering Ash (Ornus europæa).

and is only distinguished from it by its foliage being of a darker shade of green, and by its leaflets being narrower, longer, and slightly falcated. The flowers are produced in large numbers towards the end of June, gathered together in little groups or arranged in ramified panicles of a pretty greyish-violet. These two varieties, obtained from the same sowing, are comparatively dwarf in habit and prolific as regards flowers, although they blossom a month later than the ordinary Ornus. From their small size they ought to form a welcome addition to our stock of flowering shrubs for open borders.

[From the accompanying woodcut of the ordinary Flowering Ash, it will be seen that its inflorescence is drooping instead of upright as in the new varieties just named.]

A Propagating Secret.—It will be remembered that a month or two ago we alluded to an alleged extraordinary secret in propagating trees and grafting Roses, whereby much time could be saved, offered for a small sum by an Austrian nurseryman named Bachraty. This gentleman has since communicated an article on the subject to the "Wiener Gartenfreund." Briefly his new method is as follows:—Cuttings of shrubs and trees are taken off at the beginning of July, from 6 in. to 12 in. long, according to the kind. The leaves are removed from the lower portion which is to enter the ground, but those which will come above ground are attached. Beds are prepared for them in the open air by thorough digging and levelling, and afterwards applying a superficial layer, about 2 in. thick, of rotten manure from a spent hotbed. The cuttings are then stuck in about 2 in. apart and in a somewhat oblique direction. Each bed when filled is surrounded with a lath fence, so that shade may be given when the sun is very hot, and the cuttings are well watered in with a rose-spouted can. This completes the operation. The only further care necessary is a sprinkling overhead three or

four times a day during the first week, if the weather be very hot, and once a day afterwards. In the course of five or six weeks, treated in the manner indicated, the cuttings of most plants will have formed a callus, and further shading will be unnecessary. Late in the autumn a layer of rough manure, 2 in. or 3 in. thick, is spread over for winter protection. It also serves as manure when the cuttings start growing in the spring; and cuttings treated thus make extraordinary progress—in fact, plants equal to two-year-old plants from winter or spring cuttings. Very few, it is asserted, fail. The new method of grafting Roses is the insertion of growing eyes early in spring, instead of dormant eyes in the summer. They are inserted in the main stem one on each side, to form symmetrical heads. These make, it is said, as much growth the first season as the dormant eyes the second season.—"Gardeners' Chronicle." [Equally simple means for the summer-striking of shrubs are already in use in this country. In Mr. Merryweather's Nursery, at Southwell, Notts., we noticed a great number of summer-struck cuttings of choice shrubs making good growth the same autumn.]

The Original Lucombe Oak at Exeter.—This well-known Evergreen Oak is well represented in Messrs. Lucombe, Pince, & Co.'s Nursery at Exeter, by a large and beautiful specimen (though somewhat injured by injudicious pruning) growing close to the entrance gate of the Nursery. Its height is upwards of 60 ft., and it has a clean stem about 25 ft. long, girthing 10 ft. at 5 ft. from the ground; it is altogether a handsome tree with a well-balanced head, the branches being of a distinctly curved and drooping character, quite different from the Turkey Oak, which is one of its parents. This is said to be the original tree discovered by the late Mr. Lucombe in a seed-bed of Quercus Cerris in the Nursery in question. During my visit to Exeter last month I was much impressed with the beauty of the common Arbutus; there it forms quite a striking feature, its large bushes being from 10 ft. to 12 ft. in height, and as much through, laden with beautiful fruit, set off by rich foliage, and overhung by a profusion of pretty bell-shaped flowers. As a proof of the mildness of the climate at Exeter, Pinus insignis may be seen in faultless condition, furnished with a clean leader and branches which sweep the turf.—G. B., *Longleat*.

Shoots Seeking Light.—The "Irish Farmers' Gazette" records an instance of the shoots of the common Elder pushing up tiles in the floor of a newly-formed kitchen:—After they had displaced the tiles and come up, the young shoots and leaves, with exposure to light, soon changed their pallid hue for one of lively green, and there was in a short time a curious example of kitchen gardening to be seen in the shape of an Elder bush, the proprietor declining to stir it till the return of his landlord from England, that he might show him this curious case of tile, not table, turning, and make him aware of the necessity, when clearing for future building, that trees or shrubs growing on the site should be radically removed.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Huon Pine (Dacrydium Franklini).—This most elegant New Zealand Cypress-like Conifer is not generally known to be hardy. In the Edinburgh Botanic Garden collection it is the most graceful, and at the same time the most picturesque in appearance of all the Weeping Conifers. It would be difficult to imagine anything more fitting for planting on rocky points or banks.—V.

Snowdrop Tree (Chionanthus virginica).—In a recent number of the "Revue Horticole," Messrs. Transon record a curious fact concerning this plant. It is this, that when grafted on the Ash it never produces any seed, although it flowers profusely, whereas quite small plants on their own roots ripen and seed in abundance. They further recommend grafting this handsome white-flowered shrub on the roots of its own species, because when grafted on the Ash it enjoys only a very short life, and seedlings grow very slowly during the first few years. This shrub is not generally planted as it deserves to be, for its ornamental merits are considerable.

Spiræa tomentosa, removed from the fields and roadsides early in the year, will bloom the same season. It is fully as pretty (says "Moore's Rural") as S. callosa, S. Nobleana, S. lanceolata, and others which are offered in catalogues. The leaves are smallish, ovate-lanceolate, and the flowers are borne in dense racemes of purple, which form pyramidal clusters of fruit for the birds in winter.

Parrottia persica.—This is a shrub which, according to the "Gardeners' Chronicle," is very rarely seen out of botanical gardens, but it is one to which, in some situations at least, the palm must be given above all others for the magnificent combinations of brilliant red and golden amber which its leaves present in their autumn garb.

The Japanese as Tree Lovers.—A few days since we ("Moore's Rural") were shown a large volume on the "Arboriculture of Japan." Each page contained a thin section of the wood of the tree referred to, and at the top the Japanese name was given, followed by the Latin and scientific name, as given in our books of botany—all of which convinced us that the Japanese know more of us than we do of them, and are no laggards in obtaining and putting to use scientific knowledge.

PLATE XLVIII.

THE POLEMONIUMS.

(WITH A COLOURED FIGURE OF P. CONFERTUM).

Drawn by H. HYDE.

THE CLUSTER-HEADED POLEMONIUM (P. confertum), so well represented in the accompanying plate, although the most recent introduction belonging to the genus, must be regarded as one of the brightest gems which it contains: in fact, it is some time since the ranks of hardy plants were enriched by such a desirable acquisition. Its leaves are long and slender, and the pinnæ narrower than those in any other species with which I am familiar. The flowers are produced in dense clusters on stoutish stems about 6 in. high, and individually they are characterized by a much longer tube than any hitherto known species, the flower expanding to an extent about equal to that of our old species, P. cœruleum. The colour, as will be seen, is a brilliant blue, which is much enhanced by the bright yellow stamens that just protrude beyond the tube. For this remarkable addition to rock-gardens we are indebted to Messrs. Backhouse, whose collector sent it home to them from the Rocky Mountains, and from whose plant—which flowered for the first time in this country in the York Nurseries last May—our figure has been drawn. What its character of growth may prove we must leave to future experience. There need be no hesitation, however, in stating that the plant will be perfectly hardy, and, as Messrs. Backhouse inform us that wild specimens of it indicate both greater size and vigour, we may safely assume that it may yet prove to be even more beautiful than the plate represents it to be.

Jacob's Ladder (P. cœruleum).—Every one is familiar with the plant popularly known in cottage gardens as Jacob's Ladder, a useful, compact-growing species with pale green shining foliage, the leaflets of which are disposed with such regularity as to justify its English name. It is said to be a British plant, but, though found in hedge-rows in some parts of England, it has probably escaped from gardens in the olden times, as it is rarely met with far from the haunts of man. It enjoys a tolerably wide geographical distribution throughout Europe and Asia, and, besides the blue-flowering original species, we have one with white blossoms, which is almost equally common, and a form with variegated leaves is not uncommon in flower gardens, especially in the north, where its variegation is both more constant and more decided than in the south.

The Creeping Polemonium (P. reptans), which we must not overlook, is also an American species, and though, as regards beauty, far inferior to P. confertum, it is, nevertheless, an Alpine plant well worthy of cultivation. Its stems are scaly and creeping; the latter term is applicable more in the compact than in the wide sense of the word, for its growth is somewhat restricted. Its leaflets are laxly-arranged, and few in number; they are of a bronzy-green colour, the flowers form a loose, drooping panicle, elevated some 6 in. or 8 in. above the ground, and are of a slate-blue colour. It is much infested by snails, which devour it ravenously, especially the scaly root-stocks, during winter, a watchful eye being always required to prevent their depredations. It is a native of mountains in Virginia, and appears partial to a damp sub-soil and a good exposure.

The Dwarf Polemonium (P. humile) is, as its name indicates, a plant of low stature, truly Alpine in character. Its leaves are pubescent, the leaflets circular, and arranged with the greatest regularity; they spring from a hard, semi-woody root-stock. Its flowers are of a pale blue colour, and are produced on stems a few inches high. Unlike P. reptans, this species loves a dry situation and a light, sandy soil; under these conditions, it is perfectly hardy, but if placed on a damp sub-soil it is sure to die off in winter. It is also a North American plant, and I presume a native of the Mexican Mountains. Its nearest relation is

The Mexican Polemonium (P. mexicanum).—This, while possessing much similarity in the downy character of the plant, and the small rounded leaflets, is of much greater stature, attaining a height of from 9 in. to 12 in.; moreover it partakes of a biennial character, flowering in the autumn of the first year, and if it survive the winter, flowering again in summer, which second bloom appears to exhaust its energies altogether. The flowers are pale blue, and as it seeds freely, it may readily be perpetuated in that way; but if its true biennial character be not borne in mind, it is apt to disappear altogether.

The Siberian Polemonium (P. sibiricum), while belonging to the same section of the genus as our own "Jacob's Ladder,"

A ROCKY MOUNTAIN POLEMONIUM (P. CONFERTUM)

which it equals in stature, is a very distinct plant, especially as regards foliage. The somewhat rigid character of the leaves in P. cœruleum is replaced by broadly and irregularly pinnate leaves nearly twice the length, that recurve gracefully and form a much more elegant mass of foliage than that of our Jacob's Ladder. The flowering stems are less leafy, and the flowers themselves are produced in more laxly arranged clusters, and are of a darker blue. It is a native of Siberia, and makes a capital border plant.

The Large-flowered and Richardson's Polemoniums (P. grandiflorum and P. Richardsoni) appear to me to be little else than well-marked forms of P. cœruleum, the former being the Indian, the latter the North American, representative. Both have a more vigorous habit of growth and larger flowers; but that they should be considered as essentially distinct species, I have my doubts.

The advent of such a lovely accession to the genus as we have in P. confertum, gives us a lively hope that the many unexplored recesses of the botanically rich range of the Rocky Mountains may yet yield other species of equal value, as a fitting reward for the anxiety and danger which are inseparably connected with the life of a botanical collector, and the cost to those at home by whom such collectors are sent out. J. C. Niven.

Botanic Gardens, Hull.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. DENNING.

November 27.—*Potting*—Miltonias and Aspasias in peat sand and Sphagnum; also Odontoglossum vexillarium in Moss and peat fibre. *Planting*—Golden Feather Pyrethrums, Hyacinths, Anemones, and double Narcissi in flower-beds. *Miscellaneous*—Putting a few Hyacinths in Seakale pit and plunging them amongst leaves; covering Seakale crowns, so as to be able to get at them during severe frost; painting Black Hamburgh Vines and getting house ready for starting; watering first Vines, giving a good soaking, and then top-dressing with manure and loam; sending in Josephine de Malines and Crassane Pears; cutting first Asparagus and Seakale; Cauliflowers in trenches in good condition, also Lettuces in frames; manuring hand-glass Cauliflowers, putting half a barrowful to a glass; giving Cucumbers some Standen's manure; getting tan into a span-roofed pit for pot Vines; pruning old Apple trees; thinning and stopping late Cinerarias; cleaning Violets in frames; Lily of the Valley on pipes starting freely into growth. *Plants in flower*—Mignonette, Heliotropes, Narcissi, Roman Hyacinths, Scarlet, Pink, and Scented Pelargoniums, Heaths, Coleus, Epacrises, Primulas, Bouvardias, Chrysanthemums, Tree Carnations, Fuchsias, Schizostylis, Gardenias, Cytisus, and Violets.

Nov. 28.—*Sowing* more pots of Fulmer's Beans; also Cucumbers on bottom-heat (Vinery flue). *Potting*—Pleiones in peat, and a very little sand, with some loam added; planting Peach trees. *Miscellaneous*—Shifting a good-sized Apricot to terrace wall; top-dressing Vandas where Moss has decayed; making a third Mushroom-bed; sweeping up all pleasure grounds, and making everything as clean as possible, leaves being about all down; cleaning herb beds; digging flower borders.

Nov. 29.—*Sowing*—Radishes in orchard-house; still planting Cabbage; taking up some Jerusalem Artichokes, and storing them in soil to be ready in case of frost; Broccoli coming in plentifully; stubbing up useless Pear trees; pruning, tying, and painting trees in orchard-house; clearing Asparagus beds; weeding beds of Lily of the Valley; starting second Vinery at 60° at night, 65° by day with fire-heat, and 75° with sun-heat and air.

Nov. 30.—Shifting some old plants of Calceolaria aurea floribunda into 8-in. pots for spring flowers. *Miscellaneous*—Putting second batches of Asparagus and Rhubarb into heat; covering stacked Strawberry plants from frost and snow; putting some litter over Parsnips, Seakale, and Artichokes; packing some Parsnips, Carrots, Salsafy, &c., in ashes in root-house, so as to get at them easily during frosty weather; examining Orchids for thrips and fly; syringing East Indian Orchids and Odontoglossums overhead three times daily; inspecting fruit-room; filling up remaining space in Seakale-bin with manure for next crop; making holes in new Mushroom-bed to let out any excessive heat where spawn is to be introduced; pruning pillar Roses; beginning to prune Vines generally, also espalier Pears; starting first Muscat-house at 60° at night and 65° by day with fire-heat, moistening the floor thoroughly; damping down East India-house daily at 9 p.m., also in the morning, noon, and afternoon, when required.

December 1.—Putting Roman Narcissi in flower in 60-sized pots for stand embellishment; taking up and re-planting over-luxuriant Plum trees in order to induce fruitfulness. *Miscellaneous*—Putting in Roses and Pinks to force; strawing Endive under walls; covering young hand-glass Cauliflowers, frost being very severe; fumigating Orchid-houses for fly and thrips; cutting tops off Gladioli and putting their roots under greenhouse stage.

Dec. 2.—Shaking out old Moss, and re-potting Oncidium macranthum in new Sphagnum; taking up, dressing, and re-planting Briers. *Miscellaneous*—Introducing plants to forcing-pit weekly; also placing in heat first Strawberry plants; putting some small Heliotropes into first Vinery to induce them to open their buds; washing Camellias, Cattleyas, and East Indian Orchids; watering Vine pit borders three or four times over; making up hot-bed for Carrots and Radishes; securing the necessary quantity of Chrysanthemums for cuttings, and seeing that those to be saved are correctly labelled.

Stoves.

Aphelandras.—Among stove plants Aphelandras hold a high position, and deservedly so, for they are just now the most brilliant and showy of any plants in bloom, except the gorgeously beautiful Epiphyllums, which are unrivalled for general effect. Unfortunately, the Aphelandras are of little use for cutting except to put in glasses by themselves, and even then it is a great sacrifice, as they continue to expand fresh flowers for many weeks in succession if the heads be left on the plants. For table decoration they are most valuable, and if not allowed to stand too long at a time in a cool room they soon come into use again after being returned to stove-heat. Where it is desired to increase these useful plants any side-shoots they may have formed should be taken off with a ball and inserted in sandy soil singly in small pots, and then placed in strong heat in the propagating-house or under bell-glasses, where they can be kept close for a time. If there be no side-shoots to form cuttings, the plants may soon be induced to make them after they have done blooming by plunging them in brisk bottom-heat in a moist atmosphere, or each leaf may be taken off with a bud and a portion of the stem and be inserted in that way, at which time the plants should be cut down to within about an inch of the soil and kept moderately dry till they break again, when they can be shaken out and re-potted. One great advantage in propagating them as early as possible is that the plants may be got up to a useful size before blooming, which they are sure to attain if the cuttings be taken off as soon as they can be got, and afterwards grown freely on. The best and most showy of the Aphelandras is A. Roezli, which is the most beautiful of the Order to which it belongs, although aurantiaca, cristata, and nitens are worth growing, and afford variety by their diversity of flower and foliage. Aphelandras are so useful at this season that no stove should be without them, and by obtaining plants now a stock may be worked up for next season.

Epiphyllums that have made their growth early will now be in full beauty, and should be kept in light, airy positions, where they can be accommodated with a temperature ranging from 50° to 60° with a moderately dry atmosphere, under which conditions they will be found to come on slowly and last a long time in perfection. The great beauty of these and their general usefulness for cut flowers render them deserving of a more extended cultivation than they appear to meet with, as it is seldom we see them, except in large establishments. This is somewhat surprising, considering the ease with which, they may be grown, their ready means of propagation, and the many forms in which they may be had, as they are equally adapted for growing on their own roots in baskets or pots for suspending, or as pyramids or standards on the Pereskia, a stock that suits most admirably for either purpose, and on which they attain a great size and age. I have just seen some plants, at least 6 ft. high and 3 ft. through, that are twenty years old, well clothed from top to bottom, and laden with a profusion of flowers that depend gracefully from the tips of the branches, and render the plants objects of great beauty. By keeping a portion of the stock in a temperature but little above that of the greenhouse, the season of blooming may be considerably prolonged, but when so treated they must be kept rather drier at the roots than would be desirable if subjected to stove-heat. In cases where any plants of these are getting too large, a portion of the shoots, when the flowering period is over, may be broken off at any of the joints and the branches thinned out by being cut away to afford room for others to grow when the parts so severed will come in for propagating purposes either for grafts or cuttings. All that is required in the latter case is to stick them, in rather large pieces, in sandy soil, and place them where they will get a brisk heat, with just enough moisture to keep them from shrivelling. In grafting, almost any kind of Cactus stock will

do, provided they have a sufficient length of stout, clean stem in which to insert the scions. The Pereskia is, however, generally preferable to any of these, and where they are ready to hand, the grafting may take place almost at any time, but it is best done before the Epiphyllums have commenced to make their growth. The tips of any shoots that have failed to bloom, or such as have completed that process, may now be used for the purpose. In taking these off, choose firm, well-ripened pieces, as they remain plump, and retain their vitality much longer than such as are soft and immature. To attach them firmly to the Pereskia, make a cut extending through the bark and a portion of the stem, extending it for about 1 in. in a downward direction, and in the slit so made insert the graft, which should previously be prepared by slicing away a portion of each side of the end, so as to make it wedge-shaped, in which form it will fit into the slit part prepared for it in the stock, where the cut parts will come in contact with each other and soon unite. To keep them closely together the outlapping cut part of the stock may have one of the sharp, short spines of the Pereskia thrust through it and the scion into the stock, and be afterwards bound round with Moss, and this securely tied with bast matting, which will then hold the graft in its proper position till a junction is formed. The grafts should be put in up the stem at about 4 in. apart, varying the positions as to sides so as to distribute them uniformly all round till the top is reached, when the terminal one should be put in at the apex of the stock by splitting that part unless the leading shoot is left to grow to draw the sap, which process is desirable.

Bouvardias.—Where these are wanted to bloom as early as possible, and to afford a continuation of it, they must now be subjected to a mild stove-heat with a moderate amount of moisture in the atmosphere; they will then grow and produce flowers for several months to come. In order to render these as lasting as possible when cut, for which purpose they are well adapted, the plants should be placed on shelves or other positions well up to the glass, where the bloom will not only be greatly improved in substance, but will come much better in colour also. As soon as they begin to flower the plants should be liberally assisted by giving them weak liquid manure whenever they require watering. Till late years the requirements of these beautiful Bouvardias were but very little understood, as they used to be treated much after the manner of ordinary greenhouse plants, and never obtained anything like sufficient heat to get them to bloom as we now see them. Treated in the way they now are, they are among the most useful plants it is possible to have for winter work, and being of small size, and easily managed, they are well adapted to the wants of most cultivators. Now that flowering plants are becoming scarce, the value of Dracænas, Crotons, and other plants remarkable for the beauty of their leaves, is more apparent; and though much admired at all seasons, they are never so highly appreciated as during the winter; but, unfortunately, they cannot now be long trusted out of the stove. The above, however, may be safely used for a time in warm rooms or for table decoration, if previously prepared by gradually inuring them to the change, and only using such as have firm, fully-matured leaves. All plants that are likely to be required for the above purpose should be stood where they can get plenty of light and not be subjected to bottom-heat, as when that is the case, they are more susceptible of any change they may undergo, and suffer injury much more readily than when not so treated. Dracænas will stand more hardships at any time of the year than most stove plants, and as they show up so beautifully under artificial light, they are most valuable subjects to grow for decorative purposes. The new kinds now being sent out with other fine sorts already in cultivation will afford plenty of variety, so that there need be no lack in that way.

Ferns.

Where these are grown in a natural style, planted out on rockwork in a large body of soil, they will now need very little water; and in order to insure proper rest, the temperature should not be allowed to range higher than 45° by day, which will be amply sufficient during the winter months for all greenhouse varieties, and even for some of the hardier stove kinds, if the atmosphere be kept moderately dry. It is when this is charged with moisture, or the plants are kept too wet at the root, that they suffer from the thermometer being allowed to run down below the degree of heat supposed to be necessary for their safety, and therefore, in all cases where a mixed collection of stove and greenhouse kinds has to be treated together as often occurs, the more tender sorts should be as dry as they will bear without flagging, and the temperature just sufficiently high to prevent the plants from sustaining injury from cold. A minimum of 50° will carry most of the stove kinds safely through the winter, if the above conditions as to atmospheric and root moisture be observed. In the case of tree Ferns, an occasional watering down the stems will be necessary to keep the young feeders alive and the fronds from ripening off prematurely. The hot, dry weather that prevailed during July and August was very favourable to the spread of thrips, and where these or scale have effected a lodgment, this is the best time to get rid of them, as the plants will endure more now in the way of fumigating, or washing with insecticide, than they will at any other period of the year. Any old fronds that are badly infested with either of these pests should be cut away and destroyed, but not to such an extent as to denude the plants, or they will be much weakened thereby. The fumigation should take place several nights consecutively, as by so doing it need not be given in such strong doses, and the destruction of the insects is always more certain when applied in that way than it is when given all at once, while there is less risk of injuring the plants. Where these are in pots, and can be dipped in Tobacco-water, that is the most effectual and ready way of getting rid of thrips, as it not only kills the insects, but also destroys their eggs. To render the Tobacco-water more potent, add 2 oz. of Fowler's Insecticide to the gallon, which will then cause it to penetrate the varnish-like coating of the eggs and destroy their vitality. Scale can only be got rid of by persevering with hand-washing whenever any are seen, or by picking or brushing them off before they have time to breed. Ferns seed about so freely that it is generally an easy matter to find plenty of young plants springing up on the moist rock or the surface of the soil, but where there is any scarcity of these, plants may readily be raised by sowing the spores in pots filled with good, fibry loam, and covered with a piece of glass to keep the soil in a uniform state of moisture; the pots should then be stood in shallow pans in which some water should be poured occasionally, that it may be gradually absorbed by the cracks and soil. Any warm place will do to stand them until the spores begin to germinate, when they must have more light, and be gradually inured to the air by tilting the glasses.—J. Sheppard, *Woolverstone Park.*

Protecting Roses.

Tea varieties in the open ground, either in the form of single specimens or otherwise, will now require protection; if standards, consisting of such varieties as climbing Devoniensis, Safrano, Madame Falcot, or Maréchal Niel, the best plan is to get some old hay-bands, and wrap them round the stock at its union with the scion, and also round the bush itself, but not in such a way as to wholly cover it, for if that be done the buds often burst prematurely in mild weather, and afterwards get killed either by damp or frost. In the case of dwarf Tea Roses, such as are bedded or planted out in warm sheltered corners, some long, strawy litter put over them will be found to be sufficient protection, even in the severest winter. Before using the litter I draw some earth up round the union between stock and scion, and then merely shake a handful or two of the litter over the shoots, and allow it to remain undisturbed till March, when it is removed and the Roses pruned. All strong-growing Tea varieties may be planted out, and will succeed perfectly without being lifted every year for the sake of protection—*i.e.*, provided they are protected as just described. In forming a Rosery all warm, sheltered corners should be kept for the tender varieties, which need more protection than such kinds as Hybrid Perpetuals. Low walls not high enough for fruit trees, should be covered with Tea Roses, which, under such circumstances, are easily protected either by means of canvas or straw, both of which may be readily fastened by running string along the top and the middle, attaching it to the wall with a nail at certain distances apart. There are many vacant spaces on walls, such as arches over doorways and corners, where Maréchal Niel or climbing Devoniensis might be planted with advantage, and where they would not only be useful ornaments, but would furnish cut flowers when required, and save cutting from the Rosery, the beauty of which would thus be kept unimpaired.—H. G.

Hardy Fruit.

Opinions differ as to the utility of protecting Fig trees in winter, but, from personal observation, I can unhesitatingly pronounce in favour of the practice. Of course on the sea-coast and in the more southern counties protection may, perhaps, be superfluous, if not positively injurious, but all are not so favoured in regard to climate; and, therefore, in cold districts protection should be applied as soon as the foliage is off. I know of no better plan of protection than unnailing the trees, tying the branches in convenient bundles, wrapping them round with hay-bands, and again fastening them to the wall, so to remain until danger from frost is past. In the cultivation of Figs the fact should always be borne in mind that the most prominent embryo fruit of the previous autumn always produces the earliest and finest Figs the following season; hence, the necessity to protect the fruit from frost, for if but slightly injured, it is sure to drop off prematurely. As weather permits, proceed with the renovation of all fruit trees requiring such manipulation, as recommended at p. 469.

I would also take this opportunity of reiterating my opinion as to the benefits of mulching hardy fruit trees as soon as the work is completed, for the double purpose of keeping out frost and inducing the roots to take a quicker hold of the soil by keeping it warm. It is simply a matter of impossibility to overrate the importance of mulchings for almost all kinds of fruits, and though much has been said and written in favour of the practice, it is by no means so general as the advantages accruing to the trees and plants would warrant. I can safely aver that Strawberries and Raspberries nearly double their produce if mulched with good manure in the autumn, and doubtless other fruits would be alike benefited by the same process. With the exception of Peaches and Nectarines, all kinds of fruit trees may now be pruned, and such work should therefore be pushed forward whilst the weather is open. All the wall trees that are not intended to be unnailed or untied should be first attended to, in order that (whilst the buds are in a dormant state) both walls and trees may be thoroughly washed with soap-suds applied by the garden engine, as a remedy for, and prevention against insects. Where any trees have been badly affected by insects, they should be loosened and kept from the walls, and painted with the following solution :—Lime, soot, and sulphur, with clay or cow-manure to insure adhesiveness, mixed to the consistency of paint, and applied by means of soft brushes to every part of the tree. The walls, too, should be covered over with the same mixture, only in a more liquid form to make it easier of application. For the better preservation of Apples and Pears, keep the fruit-room closed whenever the weather is damp ; the ventilators may be opened for an hour at mid-day when fine, but when once the fruit has got thoroughly inured to the temperature of the room, and undergone what, in gardening phraseology, is termed "sweating," the preservation of the fruit will depend mainly upon the room being kept closed as much as possible.—W. Wildsmith, *Heckfield.*

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Palms and Dracænas for Greenhouse Decoration.

Amateurs who have not the convenience of a plant-stove wherein a sufficient temperature can be maintained during the winter season to preserve in a healthy condition such plants as require continuous artificial heat, are frequently deterred from growing many subjects which otherwise they would cultivate ; for instance, Palms, from their beauty and diversity of habit, would be almost certain to find a place in amateur's collections, were it not for the general impression that they cannot be properly developed without a high temperature and roomy houses, neither of which are required for many handsome kinds ; for even the large-growing species of Palms, more than most other plants, are capable of being kept in a small yet healthy state for years by simply restricting them in pot-room. The great increase in the production of these in recent times has so far reduced the price as to place them within the reach of all who feel disposed to possess them. They are very easily grown, but there is one essential point in connection with their well-being that it is necessary to impress upon those who have had no experience in their cultivation, and that is, the soil must never be allowed to become dry. This treatment is all the more requisite for any plant when its roots are much restricted in a small pot, but particularly with Palms, that are especially water-loving subjects. By regular attention to the supply of water, and keeping the leaves sponged, I have known such plants as the Bourbon Palm (Latania Borbonica) to be kept in a West-end drawing-room for three years in perfect health, and yet during that time not placed within 10 ft. of the nearest window ; it also was so far manageable in size that it did not extend more than 2 ft. in diameter, although it is a species that if it had received heat, moisture, and unlimited root-room, would soon have occupied the breadth of a moderate sized plant-house. Amongst the most suitable Palms for growing in an ordinary greenhouse are the following :—Areca Baueri, A. monostachya, Cocos chilensis, C. Procopeana, C. coronata, Chamærops Fortunei, C. humilis, C. robusta, C. tomentosa, Seaforthia elegans, Thrinax parviflora, Kentia australis, K. Belmoreana, K. Fosteriana, K. Canterburyana, and Corypha australis. Although many of these species are of large size when fully developed, yet, by managing them in the way above described, their growth can be kept within bounds. Amateurs who have a Vinery will find that the above plants are particularly well adapted for growing under them, as they will afford the Palms the shade requisite to keep their leaves from being scorched in summer. They should be procured in 6-in. pots, and will not require for three or four years those of a larger size than 8 in. or 10 in. in diameter. If at any time the leaves assume a yellow hue they should have a few applications of manure-water, which will impart to them a darker tint of green ; but stimulants of this nature should not be used regularly to plants that are required to be kept in a comparatively small state, as their continued use would induce an increase in leaf-growth to an extent that would necessitate larger pots than should be given them under the restricted conditions of growth to which they are subjected. There are several other plants of a like description that can with advantage be grown in a similar house ; amongst which may be named the varieties of Dracæna that will succeed in a greenhouse through the winter, the best of which are D. australis, D. cannæfolia, D. lineata, D. rubra, and D. Veitchi. These can be cultivated in moderate-sized pots, from 8 in. to 12 in. in diameter, in which they will prosper for several years if carefully kept free from insects, especially red spider, to which they are somewhat liable in summer, and which, if left unmolested, soon turns the leaves yellow, and causes them to fall off prematurely. Another nearly-allied, very handsome plant (Cordyline indivisa) is a fitting companion to the above ; it is a much slower grower, and never attains in a cultivated state such a height as the Dracænas, but must have more root-room allotted to it as it increases in size than those plants, yet it should not be overpotted. A 15-in. pot is large enough for a good-sized specimen, and care must be taken never to overwater it, especially during the autumn and winter, when the roots are at rest, or it will perish. During the dull season the soil should be kept as dry as is requisite in Pine-apple culture. Corresponding care must be taken to keep the drainage perfect ; and the soil used in potting should be such that will insure the water passing readily through it.

Vallotas.—These easily-grown, handsome, flowering bulbs should, during the next three months, be kept somewhat drier at the roots, yet, as they are an evergreen species, the soil must not be allowed to become completely dried up, or the leaves will flag, which will have the effect of causing them to turn yellow and fall off before their time, which would not only prevent their fully blooming the ensuing summer, but would also considerably reduce the strength and size of the bulbs. This is one of the best subjects for those amateurs who require plants in flower to decorate sitting-rooms. A 9-in. pot will hold four or five full-sized bulbs of Vallota that will continue in bloom for a month ; it is easily grown and readily propagated, increasing quickly through the production of numerous offsets, which are formed every year at the base of the old bulbs ; these, when about the size of large Peas, will have made two small leaves each and a small root or two. They should be placed eight or ten together in 6-in. pots, well drained in ordinary sandy loam, in which they may remain for a year or eighteen months ; like the flowering bulbs, they must not receive so much water during the winter as in the growing season.

Pits and Frames.—See that the occupants of cold pits and frames receive plenty of air when the weather is not frosty ; the object now is to restrict growth as much as possible, as the less progress the occupants of such structures make the hardier they will be: this not only applies to plants in pots, but also to subjects like young Lettuce and Cauliflowers. Either in frames, or under hand-glasses or cloches, inattention to this matter of giving air is frequently the cause of these things dying outright or suffering seriously when long-continued frosts occur.

Lettuce and Endive.—Any spare frames that are now at liberty, may with advantage be filled with Lettuce and Endive large enough for use ; so placed the plants can easily be protected. They should be inserted as closely as possible without overcrowding. Endive here may be tied up for blanching in the same way as in the open air. On heavy land, where slugs are usually more present than in light, sandy soil, it is necessary to keep a continual look-out, or the marauders will not only disfigure the crop, but do it serious injury. A slight dusting of lime and dry ashes betwixt the plants will mitigate their attacks, yet there is nothing so effectual as examining once a week the under side of the bottom leaves ; if this recommendation be persistently followed, these pests will soon become less troublesome. Each week a portion of the Endive in the open ground should be covered for blanching, the best way for effecting which is by hoeing the soil up to the plants slightly, drawing the leaves together for the purpose, and then laying 1-in. boards about 1 ft. wide on the top of the plants ; these will not only exclude the light so as to blanch the Endive effectually, but they will also ward off 10° or 12° of frost. Slates or tiles are often recommended to be used in this way, but wood being so much slower a conductor of heat, the boards are in every way preferable.

Globe Artichokes should now be protected ; if these, after the heads have been used, had the old stems cut away, the young growth at the bottom will be in a robust state, capable of enduring even the most severe winter with a little protection. The best and only material they require is about 1 ft. of dry litter placed lightly round the

young shoots, but not over them, leaving the largest leaves just above the litter; round this place about 9 in. of soil two-thirds as high up as the litter in the form of a slight Celery ridge, but not drawn up so close. So managed, I have never had this vegetable injured in the least, even in damp, heavy soil. In planting Artichokes the rows should always be so far apart—5 ft. is not too much—as to admit of the soil required for this protection being taken from betwixt them without going so deep as to leave the roots insufficiently covered. Where the rows are near together, it will be necessary to bring the soil from elsewhere; in this case coal-ashes, if at hand, will answer the purpose in every way.

Peas.—In favoured localities, where the soil is of a dry, porous nature, and it is desired to have Peas as early as possible, it is worth while sowing a few now for the chance of their surviving the winter, for if such be the case they will come in before those that are sown at the commencement of the year. Choose, if possible, a dry, sloping border facing the south with a north wall for protection; do not sow the Peas above 2 in. below the surface, covering them with 3 in. of soil drawn over them in a slight ridge, on the top of which put about 2 in. of coal-ashes: this will not only help to protect them from frost, but will also keep off slugs.

C. NAUDIN ON THE EUROPEAN PALM AND ITS VARIETIES.

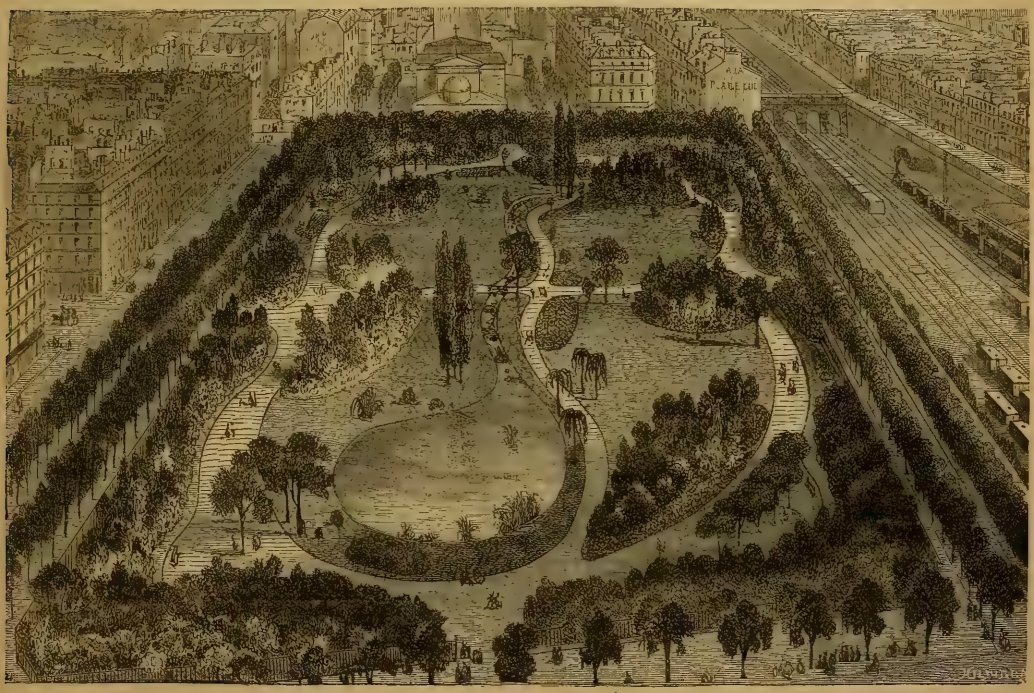
It has long been a matter of dispute amongst botanists as to whether the genus Chamærops includes one or several species. The question is one which is somewhat difficult of solution, for the answer must depend in a great measure upon the idea which each disputant attaches to the word *genus*, a term over the meaning of which botanists have had as many quarrels as about that of the word *species*. We need only take up half-a-dozen different manuals of descriptive botany, and in each we shall find a different definition of these important terms. Authors who have treated of Palms in general have, in company with Professor Martius, admitted that the genus Chamærops contains several species. Martius himself admits nine species, viz.:—C. humilis of Linnæus, C. arborescens of Persoon, C. conduplicata of Kickx, C. hystrix of Fraser, C. excelsa of Thunberg, C. Martiana of Wallich, C. Biroo of Siebold, C. Khasyana and C. Ritchiana of Griffith, to which we must add the C. tomentosa of horticulturists. From these ten species we must eliminate C. arborescens, C. conduplicata, and C. tomentosa, which must be looked on as mere garden varieties which are possibly simple variations of the C. humilis of Linnæus, who was only acquainted with the stemless form. Of the seven remaining species, four—viz., C. Martiana, C. Biroo, C. Khasyana, and C. Ritchiana—are only known as more or less perfect herbarium specimens, or by travellers' notes taken hurriedly on the spot. These notes teach us little concerning the analogy between these exotic Palms and those of the Mediterranean region. Up to the present time the only point of resemblance between the two is, that the latter have fan-shaped leaves relatively small or of medium size; but as they differ in other ways, resemblances in the form of the leaves is not enough to constitute generic relations. We may add that the C. Biroo of Japan, briefly described by Siebold, has every chance of being identified with C. excelsa of Thunberg and the horticulturists. There still remain three species to be disposed of, C. humilis, the species so well known in the south of France; the C. hystrix, of Florida; and the C. excelsa, of China and Japan. C. hystrix has so little analogy with the true Chamærops that botanists have successively classified it as a Sabal, a Corypha, and a Rhapis. Why, then, has it been placed amongst the Chamæropses? Simply because it has fan-shaped leaves of about the same size as those of the European Chamærops. As for the C. excelsa or C. Fortunei it is only necessary to compare its flowers and fruit with those of our own Chamærops to perceive at first sight that the two plants cannot be classed together. Wendland made a move in the right direction when he created the genus Trachycarpus, although the characters which were taken as a base whereon to establish this genus were only of secondary value, greater differences being constantly observed by gardeners between individuals produced from the same plant. From the preceding considerations it results that C. humilis is a definite, isolated type, having only a distant relationship to those exotic types with which it is generically associated; in a word, we ought to consider it as being extremely probable that it constitutes in itself a sufficiently distinct genus containing only one species. It is the only indigenous representative of the Palm family in the Mediterranean region beyond the confines of which it has not yet been found. It is found in this region in company with a small number of other plants which by their organization are connected with decidedly tropical families as one of the last survivors of the ancient flora of this part of the world. If there be only one species of Chamærops the number of varieties is large, and it would be easy for a species manufacturer to find at least a dozen amongst the varieties of this single type. Sometimes this Palm is quite a dwarf, and its appearance fully justifies the epithet "humilis" which Linnæus bestowed on it; at others it is caulescent, and attains a height of from 25 ft. to 35 ft., giving it a right to rank at any rate among medium-sized Palms. The thickness of its stem when grown in Africa greatly exceeds that of the Chamæropses grown in our northern hothouses, one specimen grown in Algeria being nearly 8 in. in diameter. When it grows to this size the Chamærops little deserves the name of humilis. The variations which take place in the form of its leaves are just as remarkable. In general the smaller subjects bear leaves in the form of a fan more or less open, consisting of from fifteen to twenty-five pinnules, the whole leaf being from 16 in. to 20 in. in diameter. Another variety has the pinnules in greater number, which unite to form perfectly circular leaves, giving them a certain resemblance to the Australian Livistona, and adding greatly to their elegant appearance. In the arborescent varieties, especially those grown in rich soil, the leaf is often more than 3 ft. in diameter. Others, again, have so many pinnules that the leaf becomes a monstrosity, having the appearance of being formed of two overgrown leaves joined together. This variety is probably the C. conduplicata of Kickx. The colour of the leaves, too, varies from bright green to glaucous. The leaves are sometimes even whitish and pulverulent, as in the so-called C. tomentosa. We find the same variations taking place in the fruit, which are sometimes ovoid or nearly spherical, and of the size of an ordinary Olive, at others as large as a pigeon's egg, oblong, and sometimes even dactyliform. In the latter case the somewhat stringy flesh surrounding the single seed may be eaten by those who are not difficult to please. One constant characteristic of the Chamærops humilis, which never seems to be found in the Trachycarpus of Wendland, is its capability of producing suckers, that is to say, true ramifications from the base of the stem; these suckers are thrown off whether the tree is dwarf or arborescent. Some authorities, however, are of opinion that when the Chamærops humilis has reached a certain size it loses the power of sending out suckers, except it be topped. The same thing happens with the Date Palm, which frequently throws out ramifications round the root, which often reach up the stem to 3 ft. or 4 ft. above the ground. Left to itself in a climate which suits it, the Chamærops sends forth several stems, which are almost as strong as the principal one, forming a kind of tuft. In this form it is an elegant and effective tree, especially when its leafy crown is garnished with bunches of fruit approaching maturity, at which period they are of a bright reddish hue. This description, however, is only applicable to the female plants, which must have been artificially fecundated at the time of flowering. As a rule, the Chamærops is diœcious, but from time to time we meet with polygamo-monœcious plants which give fruit with artificial fecundation. M. Naudin, who grows Chamæropses at Collioure, and who is the writer of this article in the "Revue Horticole," states that about one tree in every thirty is self-fertilizing. In any case artificial fertilization is very easy. It is only necessary to suspend a fragment of the male panicle over the pistils of the female flowers by hanging it to one of the thorns of the petiole of a leaf in the neighbourhood of the blossoms in such a position that the pollen may fall on all the female flowers. If we judge of the growth of the Chamærops by the specimens we see in pots and boxes in the north of France and Great Britain generally, we shall arrive at the conclusion that it is of slow growth, but it is quite another matter when the Chamærops is grown in the open air in a suitable soil and climate. Even under these favourable

circumstances it requires plenty of sun and proper watering. Under these conditions the Chamærops may be ranked amongst the quickest-growing Palms. Eight years ago, at Collioure, on the Mediterranean, one of the most southerly towns in France, M. Naudin sowed a number of Chamærops seeds, and has now several fine plants with tall, well-formed stems, and which have flowered during the last two years. Those which were fertilized have borne fruit, and their crowns of leaves are more than 3 ft. thick and high. The young trees in question were but little attended to for the first three or four years, and must have suffered during that time for want of water. At Collioure, the Chamærops is perfectly hardy, and fears neither heat nor cold; the wind, too, which disfigures other Palms, seems to have no bad effect upon it. [M. Naudin speaks of the hardiness of the Chamærops at Collioure as being a phenomenon. He does not appear to know that it is perfectly hardy at Edinburgh, 14° farther north, where a healthy specimen has been planted out in the open air for nearly half a century. There are also fine hardy Palms at Messrs. Backhouse's, at York, as well as at Kew, Heckfield, Osborne, and a number of other places, in fact, it seems to thrive almost anywhere, provided it is sheltered from the mechanical effects of high winds.]

Japanese Irises.—Will you kindly inform me whether the plant figured in THE GARDEN some time ago as Iris Kæmpferi var. is a form of I. lævigata or of I. setosa? I am not quite clear, after reading the description, to which parent to refer it. What is the normal type of I. setosa? Is it too much to hope that a figure of the latter plant may be given as a companion to that of I. lævigata, the figure of which I was much pleased to see? These plants are beginning to excite so much interest now that any figures or descriptions of them would be welcomed by many of your readers. —R. CURTIS, 19, *Abingdon Villas, Kensington.* [We shall very shortly publish a complete account of the Irises, accompanied by a plate of one of the most beautiful of the recently-introduced species.]

THE SQUARE DES BATIGNOLLES.

THIS is a Parisian square, of which a bird's-eye view may be studied with some advantage. It is not without a considerable amount of quiet beauty, and yet it has several defects. The dense shade-giving plantations at the margins are as they ought to be, and the roomy walk around is also right; it widens at the corners to form playing spaces for children. There is some tasteful planting of trees and shrubs, and grouping of plants on the grass; but we question much whether a space of this sort should have any artificial water at all. To express the charm of water we require distance, that it may play in the light, and that the sometimes disagreeable odour from, and colour of artificial water may not come too near us. The space would be better used for turf or trees; but granting for a moment that it is well to form artificial water in such a limited space, it remains to point out the feeble way in which this water is designed. What a terribly formal margin, and what bald, unrelieved outline! none of the simple principles that should be borne in mind by the designer of artificial water are acted on here; no concealing of the terminations, no attempt to vary or soften the ugly margin. Better a straight canal than this unfeeling and false style. There is some taste shown in arranging the rocks and small cascades of the outlet of the water, and the wonder is that in a city where there is so much good taste in



The Square Des Batignolles.

other respects, those offensive water margins, looking as if they had been stamped by machinery, should be tolerated. The walks down the centre and across are a mistake; much more charming effects could be obtained by keeping the centre open and untortured by walks, and allowing full provision for these necessary evils towards the margin.

GARDEN RECEIPTS.

Glossary of Materials.

ALBUMENIZED PAPER (see Photography).

ALCOHOL (see Methylated Spirits, Spirits of Wine).

ALOES.—A resinous substance of an intensely bitter taste, extracted from the leaves of different species of Aloë. It will always be best to use Barbadoes Aloes, which may be had in quantities at from 1s. 4d. to 1s. 8d. per lb. Cape Aloes may be obtained at 8d. per lb., but it is inferior to the other, and not cheaper in the end. [Synonym—*Bitter Aloes*].

ALUM.—The Alum of commerce is the double sulphate of ammonium and aluminium, and, in its crystallized state, a large quantity of combined water. About 2d. per lb.

AMMONIA (see Liquid Ammonia).

AMMONIA, Biphosphate of.—A salt of Ammonia used as a manure.

AMMONIA, Nitrate of.—Another salt of Ammonia used as a manure.

AMMONIA, Sulphate of.—A salt of Ammonia used as a manure.

AMMONIUM, Chloride of.—A salt of Ammonium obtained from the Ammoniacal liquor of the gasworks. About 1s. per lb. [Synonyms—*Hydrochlorate of Ammonia, Muriate of Ammonia, Sal Ammoniac.*]

AQUA FORTIS.—A powerfully corrosive liquid obtained by distilling a mixture of nitre and oil of vitriol at a moderate heat. It is a virulent poison, and will infallibly destroy any animal or vegetable substance with which it comes into contact. It may be purchased at any chemist's for about 1s. per lb. [Synonym—*Nitric Acid.*]

ARSENIC.—One of the oxides of the metal Arsenic. It has acid properties, and forms salts with the metals. It is a violent poison, and must be handled with great care, as it is not only poisonous to animals but to vegetables as well. [Synonyms—*White Arsenic, Arsenious Acid.*]

ARSENIOUS ACID (see Arsenic).

ASPHALTUM.—A bituminous substance chiefly obtained from the shores of the Dead Sea. Mineral pitch, the bitumen from which asphalte pavement is made, is a species of Asphaltum. [Synonyms—*Jew's Pitch, Mineral Pitch.*]

ASSAFŒTIDA.—A gummy substance which exudes from the transversely cut roots of the Narthex assafœtida, having a strong and disagreeable odour.

BARYTA, Carbonate of.—A salt of Baryta having strongly poisonous properties. Watson's Lawn Sand is said to owe its efficacy to a large admixture of this salt.

BEES'-WAX.—This substance is too well known to need description. White wax is made from ordinary yellow Bees'-wax by exposing thin slices to the action of the sun, wind, and rain.

BENZENE, BENZINE (Benzol).

BENZOL.—A thin, volatile, inflammable, transparent liquid, obtained from coal-tar by distillation. It is used principally as a solvent for India-rubber and gutta-percha, also under the name of Benzine Collas, for taking grease-spots out of clothes. The light spirit sold for burning in lamps under the name of Benzolene, at about 3d. per pint, serves all the purposes of pure Benzol. [Synonyms—*Benzene, Benzine, Benzoline, Coal-tar, Naphtha, Spirits of Tar.*]

BENZOLINE (see Benzol).

BITTER ALOES (see Aloes).

BLUESTONE.—This well-known salt is, roughly speaking, a combination of sulphuric acid and copper. It is a violent poison, and will stain any fabric upon which its solution may be dropped. It may be purchased at any oilman's for 6d. per lb. [Synonyms—*Blue Vitriol, Blue Copperas, Sulphate of Copper.*]

BLUE VITRIOL (see Bluestone).

BOILED OIL.—The resinifying or drying properties of oils are greatly increased by boiling them either alone or with litharge, sugar of lead, or white vitriol, when the product forms the Boiled Oil, or drying oil of commerce. Those best suited for the purpose are Linseed, Poppy, Walnut, and Rape-seed oils. The preparation of drying oils is a troublesome and dangerous process. It is much cheaper to buy them ready prepared. [Synonym—*Drying Oil.*]

BORAX.—Chemically speaking, Borax is a salt compound of two proportions of boracic and one of soda. It may be bought at any drysalter's for about 1s. per lb. [Synonyms—*Borate of Soda, Biborate of Soda.*]

BRIMSTONE (see Sulphur).

BRUNSWICK GREEN.—An impure carbonate of copper, mixed with more or less chalk or china clay; used as a green pigment by house painters.

BURGUNDY PITCH.—An impure resin obtained from the turpentine of the Abies excelsa. True Burgundy Pitch is difficult to obtain, the ordinary quality being made up of yellow resin, Linseed oil, and Palm oil.

BURNT UMBER.—An earthy, brown pigment possessed of good covering properties.

CAMPHOR.—A white, semi-crystalline, bitter, volatile solid, obtained from the Camphor Laurel tree (Camphora officinarum) of Japan and China. Being volatile, it should be kept in closely stoppered bottles; the Camphor in seed chests or insect cases requires renewing from time to time. Camphor is soluble in spirits of wine, forming camphorated spirit. Camphor costs about 2s. per lb. at the drysalter's.

CAMPHORATED SPIRITS (see Camphor).

CARBOLIC ACID.—One of the many products of the distillation of coal. It is much used as a disinfectant, the great objection being to it that it is poisonous; it is also used as an insectifuge. Crude Carbolic Acid may be obtained from the drysalter's at about 1s. per lb. [Synonym—*Phenic Acid.*]

CASTOR OIL (see Oils).—A fixed oil, obtained by expression from the seeds of the Ricinus communis. Price about 2s. per lb. at any chemist's.

CAUSTIC SODA.—Chemically speaking, Caustic Soda is the hydrated oxide of sodium. It is a powerful caustic, greyish-white, solid, which if exposed to the air rapidly absorbs water and becomes liquid. It is a most powerful poison, and if allowed to fall on the bare skin is apt to produce painful sores. It will corrode any vegetable or animal matter with which it comes into contact. About 1s. per lb.

CHALK.—Chemically speaking, Chalk is carbonate of lime. When finely levigated and dried in cakes it forms ordinary whiting or whitening. [Synonyms—*Spanish White, Whitening, Whiting.*]

CHINA CLAY (see Photography).

CHLORALUM.—A solution of impure chloride of aluminium, much used as a disinfectant. Besides being an efficient deodorizer and disinfectant, it has the advantage of being inodorous and non-poisonous. It may be purchased in 1s. bottles at any chemist's.

COAL-TAR.—One of the many products obtained during the distillation of bituminous Coal in the process of gas-making. It is too well known to need description. [Synonym—*Gas Tar.*]

COAL-TAR NAPHTHA (see Benzol).

COLLODION.—Gun-cotton dissolved in a mixture of ether and alcohol forms the Collodion of the photographer and pharmaceutist. Pharmaceutical Collodion, being thicker, is more useful to the gardener than that used in photography. It may be bought at any chemist's for from 6d. to 1s. per oz. The bottle should be kept closely stoppered, or it will become too thick for use, and as the vapour is very inflammable it should not be used at candle-light. It acts by covering the wound to which it is applied with a thin, impervious film of gum-cotton.

COPPERAS (see Bluestone, Green Copperas, White Copperas).—Green Copperas, or Green Vitriol is sulphate of iron; Blue Copperas, Bluestone, or Blue Vitriol is sulphate of copper; and White Copperas is sulphate of zinc.

COPPER, Sulphate of (see Bluestone).

CORROSIVE SUBLIMATE (Bichloride of Mercury).—A terrible poison, it is the only thing, however, which will keep insects out of herbaria. It is soluble in cold water, in the proportion of 1 to 16. Price about 6d. per oz. at any chemist's. [Synonym—*Bichloride of Mercury.*]

CREASOTE (Carbolic Acid).—A light liquid, obtained from wood-tar by distillation, and closely resembling carbolic acid, a solution of which will serve all the purposes for which Creasote has been recommended. It is also spelt Creosote, Kreasote, and Kreosote. Carbolic acid is much cheaper than Creasote, and serves every purpose.

CREOSOTE (see Creasote).

DISTILLED WATER (see Photography).

ESSENTIAL OILS.—Volatile oils found in plants, and conferring upon their flowers, leaves, fruit, seeds, roots, bark, wood, &c., their peculiar and characteristic odour. As they are only used in small quantities they may be obtained at the retail chemists as they are wanted. [Synonyms—*Volatile Oils, Essences.*]

FLOWERS OF SULPHUR (see Sulphur).

GAS LIQUOR.—An impure solution of the sulphides of ammonium obtained as a by-product in the manufacture of gas. Its value as a manure depends on the amount of sulphate of ammonia which it contains.

GAS-TAR (see Coal-tar).

GENTIAN ROOT.—The root of the Gentiana lutea contains an intense bitter principle, which renders it peculiarly valuable as a tonic. An infusion of the root is used for soaking seeds, in order to ward

off the attacks of mice and birds. Costs about 1s. per lb. at any chemists.

GLUE.—The best Glue is prepared from the parings and waste pieces of hides and skins of oxen and cows. When clarified and bleached Glue forms the gelatine of the shops. Good Glue is transparent, and nearly tasteless and odourless.

GOLD, Chloride of (see Photography).

GREEN COPPERAS OR GREEN VITRIOL.—Impure sulphate of iron, used in making ink, and as a disinfectant. It may be bought at any oilman's for about 1d. per lb.

GUANO.—This manure, which is so much used by gardeners, both professional and amateur, consists of the excrements of certain seabirds which have accumulated on the barren and uninhabited islands and rocks on the western coasts of South America and Africa. Guano is seldom to be met with in a pure and unadulterated state in the market. Both amateurs and professionals, therefore, should take care to procure this useful manure from a first-class house.

GUM AMMONIAC.—A gum resin, consisting of the hardened exudations of the Dorema ammoniacum. Used as an ingredient in glass cements. Price 1s. 6d. to 2s. per lb.

GUM ARABIC.—This Gum is too well known to need description. It exudes from the bark of several species of Acacia, hence it is frequently called by that name. The best white Gum is the most economical in the end. Powdered Gum should always be avoided, as it is generally adulterated with flour or starch. British Gum, or Dextrine, is torrefied starch. It is a cheap and poor substitute for Gum Arabic. The price of Gum Arabic varies from 8d. to 3s. per lb., according to colour and quality.

GUM GALBANUM.—A gum resin of uncertain origin used in making glass cements. Price about 3s. per lb.

GUM MASTIC.—A gum resin obtained from the Pistacia Lentiscus, much used in making varnishes and cements. Price 5s. to 10s. per lb., according to quality.

GUM SHELLAC (see Shellac).

GUM TRAGACANTH.—A gum which exudes from various species of Astragalus, used for mixing with Gum Arabic to increase its adhesive properties. About 4d. to 6d. per oz. [Synonym—*Gum Dragon.*]

GYPSUM (Unburnt Plaster of Paris).—Gypsum is a hydrated sulphate of lime from which the water may be expelled at a red heat. When once more brought into contact with water it seizes hold of that fluid with such avidity that the whole mass becomes solid.

HELLEBORE.—The insecticide Hellebore is the powdered rhizome of the Veratrum album or viridum, and has nothing to do with the true Hellebore (Helleborus niger or the Christmas Rose). It acts as a powerful poison on insects, and for this purpose it should be used freshly ground, as it is apt to lose its virtue by keeping. About 6d. per lb.

HYDROCHLORIC ACID (see Spirits of Salts).

INDIA-RUBBER.—The concrete juice of the Ficus elastica and several other tropical plants growing in both hemispheres. It is used in making marine glue, for which purpose the pure rubber must be employed, vulcanized rubber being insoluble. The pure rubber may be purchased at about 1s. per lb. [Synonym—*Caoutchouc.*]

IRON FILINGS.—These may be obtained at almost any workshop. Great care should be taken that they are freshly made, otherwise they are most likely to be covered with a film of oxide, which will render them useless. They should be procured fresh and fresh as they are wanted.

IRON, Sulphate of (see Green Vitriol).

ISINGLASS.—Isinglass is the purest natural gelatine known; the finest kinds of Isinglass are obtained by opening, folding, cleaning, and drying the swimming bladders of various species of sturgeon. Isinglass is much adulterated with gelatine. It ought to be perfectly white and odourless, and almost entirely soluble in boiling water. Varies in price, from 6s. to 20s. per lb.

IVORY BLACK.—A very rich and beautiful black pigment made by roasting scraps of ivory in crucibles. It covers better than almost any other black pigment. About 8d. per lb.

KAOLIN (see China Clay).

KEROSENE OIL.—The American name for a certain description of petroleum. Ordinary petroleum or paraffin oil may be substituted for it wherever it is ordered.

KREASOTE OR KREOSOTE (see Creasote).

LAMP-BLACK.—A black frequently made by burning coal-tar, bone oil, resin, and other carbonaceous bodies in close chambers, upon the walls of which the smoke is deposited in the form of fine soot. About 3d. per lb.

LIME.—This material is too well known to need any description. When a small quantity of water is thrown on it it is absorbed so rapidly that heat is given off, and the Lime falls to powder, losing a portion of its causticity. In this state it is said to be slacked or slaked. Mixed into a thin cream with water it forms milk of Lime. Cold water dissolves more Lime than hot. In making Lime-water, therefore, cold water should be used. Freshly burned Lime should be kept from contact with the air, otherwise it will become air-slaked.

LIME, Chloride of.—A mixture of various salts, formed by passing a current of chlorine gas over freshly-slaked Lime. It is a powerful disinfectant, and bleaches vegetable colours. It is a powerful and corrosive poison. About 6d. per lb.

LIME, Sulphate of (see Plaster of Paris).

LINSEED OIL.—A fixed oil obtained by expression from the seed of Linum usitatissimum, much used for varnishes, paints, &c. About 8d. per pint.

LIQUID AMMONIA.—The common name for what should be called Liquor ammoniæ or Liquid of Ammonia—Liquid Ammonia being a liquid obtained from ammoniacal gas by cold and pressure. It is made by passing ammoniacal gas into iced water. It may be obtained at any chemist's for about 1s. per lb. [Synonyms—*Liquor Ammoniæ, Ammonia, Liquor of Ammonia.*]

LIQUOR AMMONIÆ OR LIQUOR OF AMMONIA (see Liquid Ammonia).

LITHARGE.—Impure oxide of lead, used in making drying oils. About 4d. per lb.

LIVER OF SULPHUR.—A mixture of several combinations of sulphur and Potassium (the metallic base of potash) formed when potash, sulphur, and water are boiled together. [Synonyms—*Sulphide of Potassium, Sulphuret of Potash.*]

MARINE ACID (see Spirits of Salts).

MERCURY, Bichloride of (see Corrosive Sublimate).

METHYLATED SPIRIT.—Spirits of wine, to which one-tenth of its volume of imperfectly purified wood naphtha has been added to prevent its being used as a beverage. Being sold duty free, it is much cheaper than ordinary spirits of wine. It may be purchased at the oilman's for about 5s. per gallon.

MINERAL PITCH (see Pitch).

MINERAL TAR (see Coal-tar).

MURIATIC ACID (see Spirits of Salt).

NITRE (see Saltpetre).

NITRIC ACID (see Aqua fortis).

NUX VOMICA.—The seed of the Strychnos nux vomica, containing the alkaloid strychnine or strychnia, one of the most fearful poisons known to the chemist. About 1s. 6d. per lb.

OIL OF ANISEED (see Essential Oils).

OIL OF CLOVES (see Essential Oils).

OIL OF LAVENDER (see Essential Oils).

OIL OF RHODIUM (see Essential Oils).

OIL OF VITRIOL.—A powerfully corrosive oily liquid, formerly obtained by distillation from green Vitriol, hence its popular name. It is now made directly from sulphur by a process too long for description here. Price about 2d. per lb. [Synonyms—*Vitriol, Oil of Vitriol.*]

OILS may be divided into three classes:—Essential or volatile Oils, such as Oil of Lavender and Oil of Cloves; fixed Oils which are non-volatile, such as Linseed and Castor Oils; and mineral Oils, such as Petroleum and Paraffin Oils. Some of the fixed Oils absorb oxygen and become solid, but do not evaporate. It is only the fixed Oils that really deserve the name. (See Essential Oils, Drying Oils).

ORRIS-ROOT.—The sweet-scented root of the Iris florentina, used for perfuming violet powder, sachets, &c.

OSIER BARK.—This substance owes its properties as an insecticide to a bitter principle called salicine.

PARAFFIN.—A semi-transparent, white solid, obtained from crude petroleum or paraffin oil. The latter substance is often popularly but erroneously called paraffin. Wherever paraffin is mentioned in the foregoing receipts the solid substance is meant. An ordinary paraffin candle serves for most purposes for which paraffin is required.

PARAFFIN OIL.—A volatile, inflammable liquid, obtained by distillation from Boghead coal, and much used for burning in lamps. As an insecticide it must be used with care, being poisonous to delicate plants. Petroleum answers all the purpose, and is cheaper.

PARIS GREEN.—This poisonous pigment is a compound of arsenic and copper, and is identical with Scheele's Green. It consists of oxide of copper 28·51, and of arsenious acid 71·46 per cent., thus being a most virulent poison. The handling of dry Paris Green, especially by persons unaccustomed to its use, is attended with considerable risk and often followed by serious consequences. All packages, whether large or small, should be plainly marked "Poison." There is great danger in the mixing of this Green for Potato beetle, owing to the fine dust which arises in the process, which is inhaled, and also rapidly absorbed by the pores of the skin, especially if the person using it should be in a state of perspiration. To guard against this the hands and face (particularly the nostrils) should be protected as much as possible, and should be carefully washed after working with it, or with any of the preparations of which it is an

ingredient. As it penetrates and poisons wood, gets into the seams and crevices of articles made of metal, and even into earthenware that is at all porous, all household utensils, or anything in barn or stable (to which cattle or horses could have access) in which the article may have been mixed, or from which it has been used, should be carefully set aside, and never again used for any other purpose. Malignant sores are not unfrequently caused by scratching the skin when itching or irritated from handling the Green. It should be constantly borne in mind that it is a more dangerous and deadly poison than arsenic, and planters and others, when purchasing, should be duly cautioned to exercise the utmost care in using it. [Synonym—*Scheele's Green.*]

PARIS, PLASTER OF (see Plaster of Paris).

PEARLASH (see Potash).

PETROLEUM.—A volatile inflammable liquid, obtained by distilling the crude Petroleum from the oil-wells of Pennsylvania and other similar substances obtained in different parts of the world. It is poisonous to insects, also to delicate plants; it must, therefore, be used with care.

PHENIC ACID (see Carbolic Acid).

PHOSPHORUS.—A white, waxy-looking solid obtained from bones. As Phosphorus is highly inflammable and extremely poisonous, the preparations containing it should be bought ready prepared. In handling Phosphorus paste care should be taken to avoid any of it getting into cuts or scratches, or troublesome sores will be the result.

PHOTOGRAPHIC CHEMICALS and MATERIALS.—These are best obtained from a dealer in photographic materials, as ordinary chemists generally charge higher prices. Nitrate of silver, 4s. per oz.; distilled water, 6d. per gallon; hyposulphite of soda, 1s. per lb.; acetate of soda, 2d. per oz.; chloride of gold, 1s. 10d. per 15 grains; kaolin, 4d. per lb.; white wax, 3d. per oz. Pressure frames, baths, dishes, and other apparatus vary in price according to size.

PIPE-CLAY.—Common clay, well dried, powdered, and sifted, answers nearly all the purposes of Pipe-clay.

PLASTER OF PARIS.—Burnt gypsum, or native sulphate of lime. Gypsum contains a certain quantity of water chemically combined with it, which is driven off by heat. The affinity of the burnt gypsum for water is so great, that it combines with it greedily, forming a dry and solid mass.

POKE ROOT.—The root of the Phytolacca decandra, used, in America, as an insecticide. It is now commonly grown in our gardens as an ornamental plant.

PORTLAND CEMENT.—A species of mortar, made by calcining a mixture of limestone and clayey earth. It is characterised by absorbing a large quantity of water, and acquiring, after a time, considerable hardness. It should be kept well protected from the air and damp.

POTASH.—A corrosive deliquescent salt, consisting principally of Carbonate of Potash, obtained from wood-ashes by lixiviation and evaporation (See Carbonate of Potash, Pearlash). Price, 4d. to 6d. per lb., at any oilman's. [Synonyms—*Carbonate of Potash, Pearlash.*]

POTASH, Carbonate of (see Potash).

POTASH, Nitrate of (see Saltpetre).

POTASH, Permanganate of.—A salt of Potash, which, when dissolved in water, forms Condy's Disinfecting Fluid. It is a valuable disinfectant. It may be purchased at the chemist's for about 6d. per oz.

POTASH, Yellow Prussiate of.—A beautiful yellow salt, containing prussic acid. It requires great care in using it, as it is extremely poisonous. It may be purchased at any chemists for about 3d. per oz. [Synonym—*Ferrocyanide of Potassium.*]

POTASSIUM, Cyanide of.—A powerfully poisonous salt, closely resembling fine white sugar. It gives off fumes of prussic acid by spontaneous decomposition, and should always be kept under lock and key. Costs about 3d. per oz. at any chemist's.

POTASSIUM, Sulphide of (see Liver of Sulphur).

QUASSIA.—The wood of the Picrasma excelsa contains a bitter principle, which renders its solution valuable for soaking seeds which are liable to the attacks of birds or mice.

RECTIFIED SPIRITS (see Methylated Spirits, Spirits of Wine).

RED LEAD.—A bright red pigment possessed of powerful covering properties. It is a virulent poison. About 8d. per lb.

RED OCHRE.—An earthy pigment much used as a common red paint. About 2d. per lb.

RESIN.—A dark, semi-transparent, brittle, substance which remains after the distillation of turpentine. Used as an ingredient in varnishes. About 4d. per lb. [Synonym—*Resin.*]

ROSIN (see Resin).

SAL AMMONIAC.—A salt of ammonium possessed of powerful fertilizing properties. It is generally obtained from gas liquor. Soot owes its fertilizing properties to this salt. [Synonyms—*Muriate of Ammonia, Chloride of Ammonium.*]

SALT.—The price of salt varies in different parts of the country from 5s. per cwt. to three times that amount.

SALTPETRE.—This salt is produced naturally on the surface of the soil by the action of the atmosphere in various parts of the world, especially the East Indies. When purified by crystallization it forms the nitre or nitrate of potash of the chemist. About 8d. per lb. [Synonyms—*Nitre, Nitrate of Potash.*]

SEAL OIL.—An oil obtained from the blubber of different species of seal. It should be clear and almost free from smell and colour.

SCHEELE'S GREEN (see Paris Green).

SHELLAC.—A resinous substance produced upon the young branches of several tropical trees by the puncture of a small insect called Coccus lacca or ficus. It may be obtained of several qualities, varying from dark to light, the palest being known as the best Orange Lac. [Synonym—*Gum Shellac.*]

SILVER, Nitrate of (see Photography).

SODA.—By "soda" is generally meant ordinary washing Soda, which is Carbonate of Soda with a large amount of combined water. Good Scotch Soda may be obtained from any oilman's at from 6s. to 10s. per cwt.

SODA, Caustic (see Caustic Soda).

SODA, Acetate of (see Photography).

SODA, Biborate of (see Borax).

SODA, Borate of (see Borax).

SODA, Carbonate of (see Soda).

SODA, Hyposulphite of (see Photography).

SODA, Nitrate of.—A powerful manure, the fertilizing properties of which are due to the nitrogen which it contains. [Synonym—*Cubic Nitre.*]

SOFT SOAP.—A powerful detergent made from oil or grease and potash—Hard Soap being made from Soda.

SOOT.—This well-known substance owes its fertilizing properties to its containing a certain amount of sal ammoniac.

SPANISH WHITE (see Chalk.)

SPIRITS OF SALT.—A corrosive liquid formed by passing hydrochloric acid gas (produced by the action of oil of vitriol on common salt) through cold water. It may be purchased at any manufacturing chemist's at from 1d. to 3d. per lb., according to locality. [Synonyms—*Hydrochloric Acid, Muriatic Acid, Marine Acid.*]

SPIRITS OF TAR (see Benzol).

SPIRITS OF TURPENTINE.—A light, volatile, inflammable spirit distilled from turpentine, the residue being ordinary resin or rosin. [Synonyms—*Turps, Turpentine.*]

SPIRITS OF WINE (see Alcohol, Methylated Spirit).

SUBLIMATE, CORROSIVE (see Corrosive Sublimate).

SUGAR OF LEAD.—A crystalline salt, obtained by acting on metallic lead with the fumes of vinegar. It is used as a drier in making drying oil. Price 1s. per lb. at the drysalter's. [Synonym—*Acetate of Lead.*]

SULPHUR.—This well-known substance occurs in two forms:—First, in cylindrical sticks as roll Sulphur or brimstone; and secondly, as sublimed sulphur or flowers of sulphur. Brimstone costs about 2d. per lb.; flowers of sulphur, 8d. per lb.

SULPHURIC ACID (see Oil of Vitriol).

SWEET OIL.—This term is generally applied to Linseed, Olive, or Almond oil, either of which will serve the same purpose.

TALLOW.—This substance is too well known to need description. A composite candle should never be used to replace it, as it contains a strong acid.

TARTAR EMETIC.—A chemical compound of tartaric acid potassium, and antimony. It is a violent poison, and requires caution in use.

TRAIN OIL.—A strong smelling oil, obtained from the blubber of the whale. [Synonym—*Whale Oil.*]

TURPENTINE (see Spirits of Turpentine).

VERDIGRIS.—A green pigment, obtained by acting on metallic copper with nitric acid. It is a virulent poison. About 2s. per lb.

VITRIOL (see Oil of Vitriol, also Blue, Green, and White Vitriol).

WAX (see Bees'-wax).

WHITE ARSENIC (see Arsenic).

WHITE COPPERAS (Sulphate of Zinc).—A powerful poison in large doses, and a valuable emetic in small ones. About 1s. per lb.

WHITE LEAD.—A beautiful white pigment, formed by acting on metallic lead with the fumes of decaying horse-manure. About 8d. per lb.

WHITE WAX (see Bees'-wax).

WHITENING OF WHITING (see Chalk).

WOOD ASHES (see Potash).

WOOD NAPHTHA or WOOD SPIRIT (see Methylated Spirit).

ZINC, Sulphate of (see White Vitriol).

C. W. QUIN.

TRANSPLANTING CEDARS.

Some fourteen years ago I had occasion to remove some large Deodars, about 40 ft. high, which were standing so near together as to touch each other, and which required more room to allow them to fully develop themselves. They were root-pruned the previous year preparatory to being transplanted, a good trench having been cut round each. As they had only to be moved a short distance, in the following autumn the roots were encased in strong Elm boxes 7 ft. square, and 3½ ft. deep; a trench was cut to the place where they were to be planted, and the trees were removed by means of wooden rollers placed beneath the box and drawn by a powerful crab fixed so as to move the tree to its required place. In the following spring they were thickly mulched with half-decayed leaves, and although the succeeding summer was very dry and hot, they did well, making shorter growth, but retaining their usual good colour. Early in the present year I moved among other trees several Cedars of Lebanon upwards of 20 ft. high, which had been prepared by root-pruning the previous year. The plan adopted was as follows:—The tree being prepared with as large a ball of earth as possible, an ordinary timber-carriage was placed close to it, one wheel being on each side of the ball of earth, and the pole upright close to the main stem of the tree; a bundle of straw was placed on the axle to prevent the neck of the tree being rubbed or otherwise injured; some chains or ropes were then passed under the ball and securely fastened to the axle, and the main stem was at the same time secured to the pole of the carriage. A rope having been attached to the end of the pole, the latter was easily pulled down, an operation which brought the tree into a horizontal position. Horses were then yoked to the axle, and the tree was readily drawn to its destination, care being taken before planting it to see that the pit was the width and depth required to receive it. When trees are moved in this way they can easily be taken any reasonable distance, and afterwards generally grow remarkably well. This summer being dry and very warm, I mulched some of the largest of them with half-decayed leaves and watered them twice. In one case a large Cedar, which lifted badly, being on stony ground, lost the whole of its leaves in May, but in July it was again covered with young foliage. I have recently transplanted some large plants of Dracæna australis, 11 ft. or 12 ft. high, into more prominent positions by roughly boxing up their roots, which are of a more succulent or fleshy character than those of trees, and, moreover, they had not been previously prepared by root-pruning them. Nevertheless, by the use of small rollers, planks, and a low, strong band-truck, they were easily moved without the tops sustaining any injury. I am now transplanting a Holly hedge 8 ft. high, which had stood undisturbed for ten years, to a very dry situation, viz., a south slope ending abruptly with a high wall, the Hollies being intended to form a screen or fence. They were severely root-pruned in April last, just before they began to grow; after that they made a stunted growth, and they lift now with good balls well filled with roots. Along with them I have planted a quantity of St. John's Wort (Hypericum calycinum), which will spread and make a handsome evergreen fringe on the top of the wall. JOHN GARLAND.

Kellerton, Exeter.

INSECT FERTILIZATION.

Allow me to offer a few remarks on Mr. Meehan's paper on this subject (see p. 493). Mr. George Darwin's observations on in-and-in breeding, to which Mr. Meehan alludes, were written in support of his father's views—views not based on any popular impression. Hymenoptera may be scarce on mountains and in the spring, but I yet think there may be Lepidoptera or small insects sufficient to effect crossing. In such a matter I cannot but think a long array of facts would have been preferable to Mr. Meehan's general evidence. For instance, among spring flowers referred to by Mr. Meehan are the Violet, the abundant seed of which is produced, not by the conspicuous, but by the cleistogamous, apetalous flowers; and the dimorphic Primulas, which all cultivators know to be advantageously crossed. Besides the fallacy of which Mr. Meehan accuses himself—the confusion of pollenization and fertilization—he also appears to me to neglect the importance of dichogamy, the question whether the seed of self-fertilized plants is fertile as well as abundant, and the difference between the true stigma and the rest of the pistil. Whatever may be the case with the American species of Melampyrum, I do not think the European, with its almost horizontal flower and, when mature, projecting stigma, can be fertilized, except by external agencies, as shown by Müller ("Befruchtung der Blumen," s. 297), who enumerates seven species of insect visitors. Wistaria has been shown by Messrs. Torrey and Gray ("Flora of North America," i. 294) to be mostly infertile, except as regards its cleistogamic blossoms. It is well known that the styles of many plants are furnished with expelling hairs, which become covered with the pollen of the same blossom. This pollen may have a long vitality, but this will not move it from the side of the style on to the stigma, though it will preserve it till visited by some insect. Nay, more: the pollen may be on the stigma itself, and even send tubes down the stylar canal, yet foreign pollen may, and probably would, be prepotent. Mr. Darwin and his followers have never contended for perpetual cross-pollenization to the entire exclusion of self-pollenization, but merely for the advantage of occasional crosses. Mr. Meehan answers his own arguments in the case of the Wistaria, since he admits it to be infertile when self-pollenized. In "Nature," November 9, p. 24, Dr. Asa Gray has pointed out an error of observation and inference committed on this subject by Mr. Meehan, and though I fully value the work that Mr. Meehan has done with regard to the influence of nutrition on the development of sex, I cannot but agree with Dr. Gray that—"It is quite probable that the other cases of self-fertilization brought forward by him may bear a different interpretation from his own." I fully admit the probability of error in "protection" experiments, even when undertaken by Mr. Darwin, but I do not admit that Mr. Meehan has proved one of the four hasty generalizations with which he concludes his paper. G. S. BOULGER.

Cressingham.

MATE OR PARAGUAY TEA.

Among the novelties presented at the Centennial Exhibition at Philadelphia, is the maté, a decoction of the leaves of the Maté tree (Ilex paraguayensis). This tree grows wild in the forests of Brazil and the Argentine Republic, especially upon the various tributaries of the Parana and Uruguay; it is also found in the valleys of streams the waters of which join the Paraguay to the north-east. The tree sometimes approaches a medium-sized Apple tree in height, but the leaves are gathered mostly from smaller shrub-like plants. It is stripped of its leaves and branches almost every other year. Several varieties of this tree are mentioned, especially two—the mild or choice, and the strong. At the Exposition, a pamphlet in Portuguese, French, English, and German, written by Dr. Antonio Joaquin de Macedo Soares, presents the claims of the Province of Parana, which exports mostly through the ports of Paranaguá and Antonia. The exports of the year ending June 30, 1870, amounted to 31,777,408 lb., and rose the following year to 36,073,713 lb. The home consumption in Parana is almost 9,000,000 lb. per annum, and in Rio Grandè do Sul nearly four times as much, not including large quantities consumed by natives without having been marketed. An arroba (32 39 lb.) is estimated as sufficient for the consumption of a single individual about six months, if taken three times per day, and this would cost about 4 dollars per annum, whereas an equivalent of coffee or of black or green tea would cost much more. It is claimed that the maté beverage is very nourishing. It is prepared either from the powder of dried leaves pulverized, or from the leaves themselves by infusion. It needs intelligent experiment and observation to develop the real qualities of the plant, but it has become the favourite beverage of a large portion of the people of South America. It is less exciting than either tea or coffee, as it contains less of essential oil, while its larger proportion of resin makes it a better diuretic than coffee, though it is less rich in this element than either green or black tea. It has a pleasant aroma, and when taken with milk and sugar it is a good substitute for tea or coffee. It slightly stimulates the nervous system, but not to the point of sleeplessness. It contains as much theine as tea and double the quantity found in the same weight of coffee grains. It is sold in Rio Janeiro at about 5d. per lb.

Corsica and its Vegetation.—Many will doubtless soon be migrating to the sunny south; may I therefore suggest to those who may be tired of the Riviera—beautiful as it is—to go but a step farther and try Corsica. I spent three months there two years ago, and was so pleased with it that I mean to go there again next spring. There are excellent steamers twice a week from Marseilles to Ajaccio, which is the best head-quarters for the winter, well sheltered from the north winds and enjoying a delightfully mild climate, where snow is unknown. The scenery throughout most of the island is magnifi-

cent. Snowy mountains, 9000 ft. high, fantastic pinnacles of granite, forests of Pine, and huge Chestnuts and Ilexes, combine with the rich vegetation of the coast and valleys, to form some of the most glorious pictures to be seen in Europe. A great portion of the island is covered with a luxuriant growth of underwood or macchie, composed of Myrtle, Arbutus, Lentiscus, pink and white Cistus, Phillyreas, Laurustinus, Bupleurum, and other shrubs, not forgetting the lovely Tree Heath, which I have seen growing 12 ft. or 14 ft. high, and in March one sheet of snowy blossoms. The forests consist chiefly of the Pinus Laricio and P. maritima, and Spruce and Silver Firs, replaced about the height of 5000 ft. by the Beech. On the Pines the Mistletoe grows to a size I have never seen elsewhere. To a botanist the neighbourhood of Ajaccio would prove a real "happy hunting ground." Though not claiming that title for myself I venture to furnish the names of some of the plants found by our party between the middle of January and end of March, all within a few hours' walk of Ajaccio:—White Narcissus, Scillas (several sorts), Crocus minima, Asphodelus microcarpus (by the acre), Romulea (four sorts), Gagea lutea, Smilax (two sorts), Thymelea hirsuta, many kinds of Orchis, Cytinus Hypocistis, Muscari (two sorts), yellow Oxalis, Cyclamen, Statice pubescens, wild Lavender, Hooded Arum (in thousands, both the green and purple), Lupinus reticulatus, a great variety of Fumitories, and wild Peas of all colours. Among Ferns the Cheilanthes odora and a beautiful little Gymnogramma are common; the Nothochlæna vellea we found on the hills near the town; and the N. Marantæ is found in the north of the island, as are also the Maiden-hair and Pteris cretica. We saw many of the dry remains of the Earth Stars, and a curious Fungus like a small birds' nest with eggs, which I saw mentioned in THE GARDEN a few weeks ago. Any one accustomed to seek for plants would soon add many to the above list, especially if he remained a few weeks later than we did, and I feel sure he would never regret acting upon my suggestion to try Corsica.—W. D.

Fruits in Different Counties.—I was much pleased to learn from your columns (see p. 438) that the fruits of Herefordshire were to be investigated, and that a committee has been appointed for the purpose. This is a step in the right direction, but why not make the movement a national one, having its head-quarters in London? People interested in fruits might be found in every county who would gladly visit the gardens and orchards in their respective districts, at the proper season, and pick up any good variety which they might find either named or unnamed, and forward it to head-quarters with the grower's account of its behaviour in that particular district. In this way much valuable information would be obtained, for there are many excellent varieties of Apples and Pears, but especially of the former, to be found in country districts scarcely known out of their own locality. How very little is known out of Cornwall, for instance, of those most delicious of all Apples, the Cornish Gilliflower and Sops in Wine! Then there is that grand old Apple, the Cornish Aromatic—very large, good flavoured—one that keeps till May, and which has the peculiar property of standing stewing like Pears, and is quite as good. I agree with "B." (see p. 438), when, speaking of prices of Apples in Covent Garden, he says what a good investment a few acres of such Apples as Cox's Orange, Blenheim, Ribston, &c., would be. I should like to see some of those who grow so many acres of inferior Apples for making cider try the experiment of cutting back a few scores of them and putting twenty, or even forty, Blenheim grafts on each. I am sure it would prove a much better investment than growing Apples for cider, that in the market brings only about 20s. a hogshead. The Apple is undoubtedly the most important of all British fruits, and any scheme for extending the list of really good sorts deserves hearty support.—FIAT.

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

SINCE I wrote to you last week, excellent names, with good wishes for success, have continued to come in from all parts of the country, but I need not ask for space in order to tell the same story over and over again. Among the letters by one day's post this week came five names for the committee, which appeared to me to represent especially well the different sections of the horticultural world, all of which should be combined to make a really strong society; one from the titled owner of a beautiful and well-known garden in the Isle of Wight; the second from one whom I, a hardy plant grower, have long held in reverence—Mr. Isaac Anderson-Henry, of Edinburgh; the third from Mr. Dunn, gardener to the Duke of Buccleuch, at Dalkeith; the fourth from Mr. Daniels, of Norwich, wishing every success; the fifth from Mr. Cooling, of Derby, saying:—"If you like to send me some of the circulars I will enclose one in each letter I send to my customers." If this were done generally through the trade it would bring the matter prominently before the plant-loving community. Thanks to their kindness, that of my contemporaries, and that of leading nurserymen, among them Mr. Turner, Messrs. Veitch, and Mr. Anthony Waterer, and last, but not least, Mr. Stevens, a good many slips are now in the hands of the gardening public. I must now ask leave to say that if they want a really, strong, lasting, well-working society, they must take a little trouble for it. If all who think well of the present movement—and my name book now tells that there are many—would exert themselves each to bring in one or two suitable Fellows, and if these, again, would do likewise, as the circle constantly widened, the individual work necessary would become comparatively light. The little circulars appearing to answer the purpose sufficiently well, both giving a form for the signature of would-be Fellows, and showing that they incurred no liability beyond their subscription: I have contracted for 100,000 of them, and will gladly forward any number on application from any good horticulturist who will help a good cause by their distribution. The present mode of distribution of the circulars will cause leading horticulturists at least to receive several coming from different distributors. I venture to hope that they will not only excuse this, but that they will utilize the extra copies by passing them on to likely friends. I am the more emboldened to ask others to take trouble in this matter, that, having no greater personal interest in it than they have, I am taking a good deal of trouble myself. GEORGE F. WILSON.

Heatherbank, Weybridge.

Horticulture without Humbug.—It is announced that "notwithstanding the unfortunate financial position of the Royal Horticultural Society, the present Council, composed as it is mainly of horticulturists, are about to make a bold stand in the interests of horticulture, and to save the Society from absolute extinction." That is, of course, endeavour to save it, which there is hope they may manage through "its reconstruction on a satisfactory basis; but only on the condition that, above and before all other objects, the development of the theory and practice of horticulture shall be the aim kept steadily in view." Let them stick to that, and then the Horticultural Society will at any rate answer its purpose, to the end, perhaps, of answering in the sense of paying. In that happy event the associated Royal Horticulturists will no more exhibit themselves during the middle of summer, as it were in the melancholy position sometimes occupied at Christmas by "frozen-out gardeners," but will, on the contrary, abide in the paradise of "Jolly Gardeners" all the year round.—"Punch."

The Royal Botanic Society.—The following are the dates of the meetings for 1877:—Exhibitions of Spring Flowers—Wednesdays, March 21, April 18. Summer Exhibitions—Wednesdays, May 16, June 13. Evening Fête—Wednesday, July 4. Musical Promenades—Wednesdays in May, June, July, and two first Wednesdays in August.

NOTES AND QUESTIONS—VARIOUS.

The Cornish Gilliflower in Berkshire.—Mr. Webb, of Calcot, sends us good specimens of this Apple, recently figured in THE GARDEN, and which is distinguished by such a rich flavour. The trees of it in his garden are well-shaped standards, but bear very shyly. It would be interesting to try it on the various dwarfing stocks, particularly on the true Paradise, which is most valuable in the production of fine fruit of choice kinds like this.

The Management of Rockwork.—"V." has misinterpreted (p. 480) my remarks about rockwork. I alluded only to well-made rockworks or rocky beds, and I suggested that, as a rule, valuable plants are placed too close upon them, so that when they spread into the well-grown tufts, in which their true character alone appears, they overrun and interfere with one another. With the amount of instruction available now, no one should have a badly constructed rockwork, and my notes were only addressed to those who began on right principles.—SALMONICEPS.

Book on Indian Gardening.—A lady writes to me from Agra, asking if there is any book on gardening which would be of use to her in that neighbourhood. I would esteem it a favour if you could help me in this matter.—HENRY NEVILE, *Chislehurst.* ["Firminger's Manual of Gardening in India." We believe the book is now out of print, but it may be met with in second-hand book shops.]

Endive as a Cooked Vegetable.—In the article on Endive in THE GARDEN (see p. 484), instructive and interesting as it is, no allusion is made to its use as a cooked vegetable. In France Endive, dressed like Spinach, frequently appears at table. Can any of your readers inform me what kind of Endive is best for such a purpose?—CHRISTINE REEVE, *Rutland Gate.*

The Carolina Jasmine (Gelsemium nitidum).—I do not remember to have seen this in England, though it is one of the most odoriferous of plants. Can any one say whether or not it is in cultivation in British gardens?—D. B., *Norfolk, Virginia.*

Finely-flowered Masdevallia tovarensis.—This beautiful snow-white Masdevallia is now flowering freely in the Odontoglossum-house at Fernie-hurst, Shipley, near Leeds. One plant of it is bearing thirty blooms, from four to five blossoms being on each stem. Three small plants of it are producing six blooms each—in all forty-eight blooms.—E. CULLEY.

Treatment of Newly-imported Tree Ferns.—As I expect some Tree Ferns from Tasmania, I want instructions how to treat them. I mean the Tree Ferns to be out-of-doors after reviving them. Perhaps some of your readers experienced in such matters will kindly answer this question.—R. W.

Nierembergia rivularis.—How is this best cultivated? I cannot make it bloom, though the plants are healthy and spreading.—SALMONICEPS.

Origin of the Garibaldi Strawberry.—Can any of your readers furnish me with the name of the person who sent out this Strawberry? An answer to this question might settle the matter as to whether it is the same as Vicomtesse Hericart de Thury or not.—E. BENNETT, *Rabley, Herts.*

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

DINNER-TABLE DECORATIONS.

WITH the view of placing before the public the best specimens of dinner-table decorations, horticultural societies have offered liberal prizes for the encouragement of tasteful arrangement in that direction, and many of the decorations produced have certainly been beautiful as works of art, and have consisted of such costly materials that the judges in many cases could scarcely do otherwise than award the prize to stands that, as regards commercial value, were out of all proportion to the prizes competed for; and in this way tasteful arrangement has often been to some extent defeated by the very means intended to promote it. Here, as in most other places, we rely for effect on the decorations themselves, and extemporize a groundwork out of materials of a very ordinary character; for although we find elegant stands and vases useful in drawing-room decorations, they produce too much sameness on the dinner-table, which we always endeavour to arrange in such a way as to create a sort of pleasant surprise or floral treat for the guests. The only glass we ever use in connection with dinner-table decorations is a single specimen glass to hold a button-hole bouquet for each guest or a single bunch of Neapolitan Violets.

Plants suitable for Table Decoration.

Where great variety in the way of decoration has to be provided, provision as regards plants must be made some considerable time before they are likely to be wanted, for, although large size is not generally required, they must be perfect specimens of their respective kinds, and well furnished with foliage down to the rim of the pot. We find the following most serviceable both in the form of single specimens and in pairs, viz., Palms having leaves of an arching and graceful character; Ferns belonging to the Maiden-hair class, Dracænas of different kinds, Crotons of the narrow-leaved type, Pandanus or Screw Pines, Variegated Pines, and Caladiums; of flowering plants we use at this season Begonias, Primulas, and Epiphyllums; and of fruiting ones, berry-bearing Solanums and Rivinas; of fruit trees for table decoration, miniature Oranges, pot Vines, and Strawberries are perhaps the most effective. Amongst small plants for furnishing the groundwork of large plateaus, or bold and striking masses, the common Lycopodium denticulatum is best, nothing having shown off the more stately objects employed to such advantage as a carpet of this Club Moss. Seedling Ferns in thumb-pots, Panicum variegatum, and Fittonias are excellent subjects for carpeting purposes, and small plants of the bronze-coloured Alocasia metallica are very rich and striking. When variegated plants are employed, they should consist of kinds in which the colours are well defined, white and green being the most effective. All the Fittonias, for instance, are beautiful, but under artificial light the white-veined F. argyræa is by far the most striking.

Flat Decorations.

The way in which a table should be decorated must of course depend on the manner in which the dinner is served, and whether the candelabra are on the table or suspended from the roof, the latter affording the best opportunity for varying the design, for when the lights are on the table it is necessary that they should form the central object, and for a table of any extent there must be two end candelabra with vases for a pair of well-matched plants between them. When dessert dishes only are placed on the table, a good top and bottom dish will be all the central objects required, unless the table is for more than twenty people; the side dessert dishes, glasses, carafts, &c., must, of course, be placed conveniently for the guests, after which a tasteful form of flat decoration may be arranged on the cloth in any kind of design that is not too formal by simply laying foliage of the most suitable character on the cloth in combination with flowers or berries. For instance, if we use variegated Pines in vases, the leaf decoration should consist of the brightest-coloured foliage of the Barbarossa Vine, Oriental Plane, Berberis Aquifolium, and Virginian Creeper; and beautiful as these are even under ordinary circumstances, it can [scarcely be conceived how much richer their markings become under a strong light reflected by a showy ground or cloth. With Solanums and Rivinas for vase plants, an excellent decoration may be formed with the foliage of the common White Jasmine, and a centre formed of the brilliant berries of the Pyracantha. An agreeable change might also be effected by using Ferns for vase plants, and a carpeting of flat sprays of Lycopodium, with the long hair-like roots cut off, in order to enable them to be laid flat on the table. This could scarcely be improved by any addition in the way of flowers. This style of decoration has this advantage that a great variety of materials can be used in it, and that its changes and combinations are endless, always of course adapting them to circumstances, and having regard to harmony with surrounding objects.

Plateaus or Decorations in Sand.

These are usually arranged in tins of various shapes and sizes to suit the table to be decorated, and applied in such a way as to form either one design or a series of distinct ones, representing, for instance, a miniature flower garden, and in both cases the simpler the form the more effectively they may be filled. At certain seasons, when Roses are plentiful, the table may be, to a great extent, decorated with Roses, by employing strong zinc plateaus, made to fit the table, leaving only just sufficient margin for the appendages necessary for the dinner; the remaining space is then filled with sand, varying its surface occasionally, and ornamented with large trusses of Roses and foliage, either in the form of masses or rows of separate colours and shades—or separate tins with a central Palm, each being filled with a distinct kind of Rose, make excellent centre rows, and constitute a good change from the previous design. When this kind of decoration is employed, the dessert dishes are usually omitted from the table, and handed round as in other courses. In cases in which china-ware is introduced with this kind of decoration as side or flank ornaments, a better effect is obtained by confining the kinds of flowers used to the smallest possible limit, as a miscellaneous collection in stands of varied colour is anything but pleasing; in fact, the best effects are generally obtained by filling such receptacles with green Lycopod, and inserting in it Gardenias or Stephanotis, when it is expressly desired that such flowers should be on the table. For autumn and winter decorations we generally use a combination of plants and flowers for furnishing flat plateaus—tall, slender, central plants, rising from a groundwork of green Lycopod and Ferns, and edged with Chrysanthemums, Poinsettias, &c., or for change, masses of fine-foliaged plants are employed, such as Fittonias, Alocasias, Panicums, Isolepis gracilis, Coleus, &c., all of which are highly effective.

Miscellaneous Decorations.

Epergnes, when skilfully filled with plants of a light trailing habit, make excellent centre pieces for medium-sized tables; and with the dessert on the table and a specimen glass to each guest containing some choice Rose or Orchid blossom, a light and pleasing arrangement is the result. Specimen glasses are useful either on large or small tables, and although they are obtainable in the form of various designs, those with a heavy foot-stand are the best, as they are not so liable to be upset. A single Rose with foliage, or a choice button-hole bouquet, fills them effectually. Small globe glasses make good additions to the dinner or breakfast table filled with flowers, and from October to May we use them constantly for small bunches of Neapolitan Violets. JAMES GROOM.

WHITE BOUQUET FLOWERS.—A cheap method of obtaining these at this season is to pot up some small plants of Laurustinus, or, better still, to have them established in pots ready for introduction to the forcing-house. Some grow Laurustinuses as standards for purposes of indoor decoration as well as for cut flowers, and under glass the blossoms come pure white, and look so different from those of Laurustinus not so treated that when arranged in bouquets, the flowers might readily be mistaken for something less common.—W. W. H.

NOTES OF THE WEEK.

Plants in Flower in the Isle of Wight.—Mr. Ellacombe's list of November flowering plants in his well-furnished garden at Bitton makes me think even more highly than I did before of the suitability of the climate of the Isle of Wight for many shrubs and plants. To this climate may be attributed the blossoming of the following plants at this dead season of the year, viz., Helleborus purpurascens, orientalis, and altifolius, Gentiana acaulis, Schizostylis coccinea, Cyclamen Coum rubrum, Iris stylosa (I gathered the first blossom on November 28; it has opened before on that date), Veronicas in abundance, Crocus longifolius, Brugmansia lutea, Lardizabala biternata (this makes the finest covering of all for a wall in this part of the country), Erica mediterranea, Vinca major, Iberis semperflorens, Daphne, Lithospermum prostratum, and not a few other plants have some struggling blossoms about them. Those I have named are quite in a flourishing state. Oxalis versicolor (the most charming of the tribe with which I am acquainted) and O. lobata have only just left off blossoming, and Daphne indica rubra, Lonicera fragrantissima, and some others will very soon begin to bloom. While, however, we have to thank our climate for so much, there is a reverse side to the picture. When I left Mr. Ellacombe's garden last summer, his lawn was exquisitely green, and I came home to find everything parched up here, and my lawn was more like a dusty road than anything else. But just now the advantage, I think, is with us; we scarcely have to part with our favourites at all, and, so far as they go, winter is reduced to a minimum. Since writing the above I find the best plants now in blossom to be Yucca gloriosa and Coronilla glauca. They grow luxuriantly in the island, and are very useful just now.—H. Ewbank, *St. John's, Ryde.*

Aster grandiflorus.—In my list of November flowers (see p. 498) I observe that I omitted this Michaelmas Daisy. It is a very distinct and handsome species, and keeps its flowers for a long time.—H. N. Ellacombe, *Bitton Vicarage, near Bristol.*

Globe Artichokes in Covent Garden.—Large heads of these are now exposed for sale in some shops in the Central Avenue; they are imported from Marseilles in tolerably large quantities, and are excellent in quality, being almost as fresh and green as if newly cut from growing plants.

The Cape Pond-weed (Aponogeton distachyon).—Beautifully scented flowers of this favourite water plant may still be seen in an open tank in the Hale Farm Nurseries, at Tottenham, and should the weather continue mild they will probably keep in bloom throughout the winter.

A Winter-flowering Grape Hyacinth (Botryanthus pallens).—A few spikes of this pretty Grape Hyacinth are now in full flower in the nurseries at York. They are of a delicate but bright blue, and form a welcome addition to our few hardy winter-flowering plants. They began to open late in the autumn, and will probably continue until early in spring.—R.P.

Gentiana acaulis.—Although most rock plants have now ceased blooming, this continues to produce masses of large, well-coloured flowers in several of the London nurseries; and were the plants protected by means of a hand-light or bell-glass during heavy storms and severe frosts, they would doubtless furnish a fair amount of bloom all through the winter.

Cyclamens for the London Market.—Well-grown plants of these loaded with bloom may now be seen by thousands at Mr. Beckworth's at Tottenham. Though only raised from seeds sown last January, they are now in 48-sized pots, and the tubers are as large as good-sized Tulip bulbs—not more than ten months having thus elapsed between the seed-sowing and the flowering state.

Winter Strawberries and their Prices.—As some are of opinion that Garibaldi, Vicomtesse Héricart de Thury, and Stirling Castle are one and the same variety, I shall exhibit Garibaldi at South Kensington on the 6th inst., and trust that those who state that they have ripe fruit of the other two kinds will also forward specimens of them, in order that the Fruit Committee may arrive at some decision in the matter. Some of my fruit sold privately last week realized about 16s. per lb., and that sent to Covent Garden on Saturday last also fetched fair prices.—E. Bennett, *Rabley, Herts.*

The Single Blue Daisy (Bellis rotundifolia cœrulescens).—I have been somewhat surprised to find this pretty single Daisy blooming quite freely under glass during the past month, and appearances seem to indicate that it will produce flowers all through the winter. When flowers of a showy character are abundant, a plant like that under notice meets with but scant attention; but just now, when flowers—and especially hardy ones—are scarce, even a Daisy is not to be despised. Its flowers are borne on stalks 6 in. in length, thus rendering them capable of being utilised for button-hole bouquets. A Primrose, a Violet, and a Daisy in combination may not be so pretentious as a Camellia or Rose, but they nevertheless make up a pretty button-hole bouquet.—A. D.

Eucharis amazonica in Winter.—A specimen of this well-known South American Amaryllid, in Mr. Williams' Nursery at Holloway, is now producing twenty-five spikes of perfectly-formed flowers and buds—in all some 130 single blossoms.

State of Business in the Nursery Trade.—Notwithstanding the depressed state of business generally, and the uncertainty that exists owing to war possibilities, it is gratifying to hear on all sides reports of the great activity that prevails in the nursery trade, especially in the departments devoted to trees, shrubs, and hardy plants. In fact, it is said to be the best season on record so far as commercial gardens are concerned.

Phalænopsis at Clapton.—Several thousands of plants of these lovely Orchids are now coming into bloom in Messrs.-Low's Nursery, and in a few weeks' time will produce a charming effect. The principal kinds are—P. amabilis, grandiflora, Schilleriana, and rosea, plants of all of which are growing in small square wooden baskets; these are arranged on light temporary stages, composed of slender strips of deal, and through which the roots protrude in thick masses, apparently in search of the moisture which is abundantly supplied to a bed of ashes underneath.

Cypripedium insigne.—A specimen of this well-known Lady's-slipper, in one of Mr. Day's Orchid-houses at Tottenham, is now bearing upwards of seventy of the largest and most perfect blooms we have ever seen, and, moreover, the tips of the petals have a much clearer and wider margin of white than is generally the case. This, although the oldest Lady's-slipper in cultivation, still ranks among the best of its class, and is most useful as a cut flower. Blooms of it in a cut state have been known to last in good condition three weeks in an ordinary sitting-room.—S.

Amaryllises in Bloom.—Large quantities of these are now opening their flower-buds in the Pine-apple Nursery, and in a short time will be strikingly effective—especially a newly raised kind named O'Brieni, plants of which bear five, and in some cases six, large, delicately-marked rose and white flowers. Its foliage is large and graceful, and its midrib of a rich creamy-white colour. Thousands of bulbs of A. Hendersoni, raised from seed saved two years ago next January, now measure from 2 in. to 2½ in. in diameter, and are now showing flower; these were grown in cold pits during the summer, and after the foliage had died down, were stacked on their sides under the stages near the pipes of a warm plant-house, which had the effect of thoroughly ripening the bulbs, to which circumstance is attributed their abundant inflorescence.

Gigantic Growth of the Castor-oil Plant.—Mr. Henry W. Sargent writes to us from his beautiful garden on the Hudson River as follows:—As some of your readers may like to know how the Castor-oil Plant behaves in this country (United States), I send the following memorandum from my gardener:—"Measurement of a Castor-oil Plant grown at Wodenethe, Fishkill on Hudson, between May 1 and October 30, 1876:—Stems and leaves, 20 ft. in height; side branches, 10 ft. in length; circumference of stem at ground, 11½ in.; circumference of stem 14 ft. from ground, 6¾ in." The plant here referred to was raised from a seed put in the ground, and not first started under glass, and never had a drop of water except rain during a long and very dry summer.

Richmond Park and the Public.—For some time past considerable dissatisfaction has been manifested in the neighbourhood of Richmond, with respect to the management and appropriation of Richmond Park, the principal grievance appearing to be that the public are excluded from a large area, which it is contended belongs to them. It is stated that large portions of the Park have from time to time been enclosed, ostensibly for the purpose of renewing the trees, but in reality for the rearing and sheltering of game, and it is urged that whilst the recreation of the public is thus interfered with, the national exchequer bears the expense of this game preservation. It is added that in addition to the large space inclosed, and the cost incurred for game preserving, upwards of 100 acres are also inclosed in winter for feeding the deer, notwithstanding that a large sum is annually voted for food for them over the park generally; and a further complaint is that although the park is more than 3000 acres in extent, cricket and other athletic exercises are strictly forbidden. According to "The Builder," it appears a committee has been formed, and arrangements are in progress, under which it is expected that a public meeting will shortly be held in relation to the present management of this park.

THE FLOWER GARDEN.

THE CHEQUERED MEADOW SAFFRON.

(COLCHICUM PARKINSONI).

This rare and beautiful Colchicum, one of the oldest of exotic plants cultivated in English gardens, singularly enough seems to have fallen into disuse, as nowadays it is seldom met with. It is, however, as will be seen, well worth a place in all collections in which old-fashioned bulbous flowers are appreciated. From the "Botanical Magazine," where an excellent coloured figure of it is given (see t. 6090), we learn that the plant was originally accurately described and rudely figured by Parkinson, in his "Paradisus Terrestris" (1629), p. 155, figs. 5 and 156, where it is distinguished from other tesselated Colchicums by its smaller size, brighter and clearer colouring, and by the undulated margined leaves lying flat on the ground. It is a native of the Greek Archipelago, as is also its congener C. variegatum; the latter, however, is a coarser-habited plant than C. Parkinsoni, and its markings are much less distinct. Parkinson's original description of this Colchicum is so quaint

Colchicum Parkinsoni.

and to the point that we have thought it well to reproduce it:—"This most beautiful Saffron flower riseth up with his flowers in the Autumn, as the others before specified do, although not of so large a size, yet far more pleasant and delightful in the thick, deep blew or purple-coloured beautiful spots therein, which make it excel all others whatsoever: the leaves rise up in the Spring, being smaller then the former, for the most part three in number, and of a paler or fresher green colour, lying close upon the ground, broad at the bottom, a little pointed at the end, and twining or folding themselves in and out at the edges, as if they were indented. I have not seen any seed it hath born: the root is like unto the others of this kinde, but small and long, and not so great: it flowreth later for the most part then any of the other, even not until November, and is very hard to be preserved with us, in that for the most part the root waxeth lesse and lesse every year, our cold country being so contrary unto his natural, that it will scarce shew his flower; yet when it flowreth any thing earlie, that it may have any comfort of a warm Sun, it is the glory of all these kindes." Under our improved methods of cultivation better results may doubtless now be looked for.

B.

Pansies for Summer Bedding.—Where house accommodation renders it necessary that some cheap, hardy material should be employed to furnish the flower-beds in summer, it will be well to sow seed of Pansies and Violas in colours at once in pans or boxes in a greenhouse or frame, as the produce will be good, strong plants fit to put out in April, and to begin blooming in May. Pansies, as a rule, come fairly true from seed, and it is well to have a small reserve of each colour to fill up the beds of any that require removing. For spring-blooming Pansies, seed should be sown in July to make strong, robust plants suitable for planting out in November.—D.

Nierembergia rivularis and its Culture.—"Salmoniceps" (see p. 516) is not alone in his complaint as regards not only the blooming, but even the culture of this plant, several people, even in the South of England, having complained of its want of hardiness. My experience is that it is perfectly hardy, and that it thrives best in a stiff, clayey soil—at least a patch with us, in the open ground, is fully 3 ft. in diameter, and has occupied the same place undisturbed, beyond the removal of weeds during the summer time, for the last eight or nine years. Two things are requisite to success, viz.—a heavy soil, and absolute firmness of the ground in which the plant grows. These, accompanied by a sunny aspect, and culture on a level surface, will in all probability secure success. Perhaps I ought to have added as equally important, and that on which success may chiefly hinge, viz., a cool, damp, subsoil, a condition which it here enjoys to the full.—J. C. Niven, *Botanic Garden, Hull.*

The Prairie Lily (Mentzelia ornata) at Home.—I have read with much interest the notices of Mr. Thompson's new Mentzelia ornata from your correspondents who have been fortunate enough to flower it; I, to my great regret, am not amongst the number. The following is an extract from Dr. Bell's "New Tracks in North America," describing it as he saw it on its native hills, and giving its very pretty American name, which may interest some of your readers. If the plant should prove accommodating enough to put up with our climate, it seems likely to be a very interesting addition to the many charming plants we have already to thank Mr. Thompson for introducing. "The bluffs," says Dr. Bell, "at the back of this camp which here encroach upon the river—the Red River, near the Raton Mountains—were covered with a plant unknown to me. This was a very large night-blooming Mentzelia—M. ornata, *Torr.*, called by the ranchmen the Prairie Lily. The flowers are larger than those of the finest Water Lilies, of exquisite whiteness, and remain closely shut all day—even at sunset they do not open; but at ten o'clock, when I visited them in the bright moonlight, every petal had expanded to its full length, the barren rocks were changed into a perfect fairy-land, and the air was richly scented with the fragrance of the flowers. A full grown plant stands from 3 ft. to 4 ft. in height; the petals measure 3 in., stamens 2 in., leaves 4 in. in length. The scent, although pleasant at first, brings on a violent headache if too freely indulged in, especially when sleeping under its influence. These plants seem very capricious for we only found them in a few localities, but in these they grew in great abundance." This plant, according to Thorburn's catalogue, is found on the plains west of the Mississippi River from Missouri southward. It is a biennial, and is said to be a vigorous grower; it should, therefore, not be planted less than 3 ft. apart. The flowers are from 4 in. to 5 in. in diameter, and of a creamy-white colour; they are composed of two rows of petals surrounding the long stamens, which number from 200 to 300. The whole flower is stated to be so regular and perfect that it cannot fail to take a foremost rank amongst biennials. The seed should be sown in the autumn, and the young plants should be put out the next season, when they will flower from August until frost sets in; or they may be sown very early in spring and transplanted, when they will generally flower the first season.—C., *Salisbury.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Narcissus Horsfieldi.—This is a seedling raised from N. bicolor by the late Mr. John Horsfield, a well-known "Lancashire botanist." It was sent out in twenty-eight lots, at 1s. 6d. each single bulb, for the benefit of his widow, shortly after his decease, which took place in 1854. It is one of the most vigorous of all Daffodils, and for masses or clumps is unsurpassed, except it be by its offspring, N. Empress, which was raised some years ago by the late Mr. W. Backhouse.—B.

The Tree Mallow (Lavatera arborea).—This old plant is coming into use for paper making. The seeds are reported to be equal in feeding properties to oil-cake, and to the paper-maker the bark is said to be equal in value to Esparto Grass. On the latter subject experiments have been made by Mr. Gorrie, of Edinburgh, who has reported the result to the Highland and Agricultural Society. The Tree Mallow thrives best in mild and sea-shore districts.

Hardy Climbers for Basket Handles.—I should be obliged by a little advice as to what Climbers I should put over the handles of eight baskets which I have in my garden. The handles are iron. I have put Ivy over them, but the effect is too dark and heavy. I think of filling the baskets this year with Phlox Drummondi, Verbena venosa, &c., and I should be glad to know if dwarf Petunias would look well in them. I cannot put Tropæolum canariense or Clematis Jackmani on the handles, as I have such quantities of them on a trellis not far off.—B.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. DENNING.

December 4.—*Sowing*—Nemophila in pots; also four lights of Radishes and Carrots on a leaf-bed. *Miscellaneous*—Manuring and rough digging vacant ground; beginning to dig flower garden borders; putting "show" Pelargoniums into their flowering pots; putting a little Moss to plants of Odontoglossum coronarium which are just pushing out new roots; putting in to force Cinerarias, Anne Boleyn Pinks, Roses, and Dielytras; putting into Seakale sheds Endive to blanch, to be ready by the 14th; finishing painting and tying Vines in second Vinery, preparatory to starting; protecting Celery ridges with litter when frosty; washing Camellias in conservatory; Snow's White Broccoli coming into use; getting second Peach-house ready for starting; top-dressing borders with horse-droppings and loam; saving manure for third Mushroom bed; putting soil into Seakale shed to warm for Beans; clearing bottom leaves off cuttings whether decayed or not; hoeing among Strawberries and other crops, such as Cabbages, Lettuces, and Onions; starting Muscats in pit Vinery at 60° night-heat.

Dec. 5.—*Planting*—Raspberry canes, giving each two forkfuls of manure. *Miscellaneous*—Putting herbaceous Calceolarias into their flowering pots; also Asparagus on bottom-heat every fortnight, and Seakale every week; shifting plants of Schizanthus into 10-in. pots, and staking them; giving orchard-house a thoroughly good watering and a top-dressing of manure and loam; Asparagus coming in freely.

Dec. 6.—Trenching border for Roses; finishing the planting of fruit trees; planting a new Mint-bed; making a new Mushroom-bed. *Miscellaneous*—First buds in Peach-house swelling a little; flower-buds on Dendrobium nobile swelling fast, those on D. Wardianum just showing; Vandas producing a good many spikes from ¼ in. to ½ in. long; giving air to all Orchids as soon as the fire begins to raise the temperature of the house well above night-heat.

Dec. 7.—*Sowing*—Mignonette in pots to come in in April and May, also Cucumbers, Mustard and Cress regularly, and 500 pots of French Beans; shifting some late Primulas into their flowering pots. *Miscellaneous*—Clearing Fig-house shelves for Strawberry plants; taking out of Seakale shed a few Tulips in flower; getting Pea stakes from woods; fumigating East Indian Orchids and Cucumbers again; sponging Palms.

Dec. 8.—*Potting*—Pleione lagenaria and maculata, &c., in good peat; shifting a few small Palms for dining-room and other kinds of decoration. *Planting*—Yew trees and Junipers in the pleasure-ground and guarding them with wire protectors to keep off rabbits, from the attacks of which they often suffer; plunging some Hyacinths on bottom-heat in Vinery, also Lily of the Valley. *Miscellaneous*—Putting in more Asparagus to force, which, if kept at 65° by night and 70° by day fire-heat, will be ready for use in from sixteen to eighteen days; nailing trees on Plum wall; making Muscat-house ready for starting, giving border plenty of water, some Standen manure, and a top-dressing of turfy loam; sending in Golden Pippin and Ribston Pippin Apples; finishing pruning Green Gage Plum trees; pruning trees in second Peach-house and loosening them ready for painting; Disas breaking strongly in peat, horse manure, and sand. *Orchids in Flower*—Calanthe (four varieties), Oncidium bicallosum, O. Cavendishi, O. Papilio, Sophronitis grandiflora, Vanda tricolor, Epidendrum vitellinum majus, E. rhizophorum, E. varicosum (the last a very sweet-scented kind), Cypripedium insigne, Lycaste lanipes, L. Skinneri, Barkeria Skinneri, Odontoglossum Halli, O. roseum, Cattleya labiata, C. Perrini, C. Harrisoniæ, Oncidium aurosum, O. crispum, Maxillaria venusta, Pleione maculata, Saccolabium densiflorum, Phalænopsis amabilis, P. rosea, Cymbidium Mastersi (just opening), Warrea Lindleyana, Zygopetalum maxillare and Mackayi, and Ansellia africana. To these may be added—Angræcum bilobum, Bolbophyllum auricomum, Cattleya præstans and marginata, Mesospinidium vulcanicum, Masdevallia Harryana, Veitchi, trochilus, and Daviesi, and Phalænopsis grandiflora and Portei.

Dec. 9.—Taking up Ghent Azaleas for forcing. *Potting*—Ashtop Potatoes and placing them in heat; sending in Glou Morceau and Crassane Pears. *Miscellaneous*—Giving Lilacs and Briers in pots a top-dressing of manure; pruning and tying up pillar Roses; pruning espalier Pear trees and saving grafts of any kinds that are required; cleaning lawns of leaves and worm-casts, and rolling them well and often. *Plants for House Decoration*—Scented-leaved and scarlet Pelargoniums, Narcissus, Hyacinths, Primulas, Heliotropes, Mignonette, Tulips, and Fuchsias.

Stoves.

As most of the occupants of these structures are now in a state of comparative inactivity from having completed their growth, more than ordinary care will be requisite in the use of the watering-pot, or the roots will soon suffer injury from the soil becoming too wet, as they absorb but little moisture at this season. The great point in plant cultivation is to know when to water, and to maintain the happy medium between drought and excessive moisture; and at no season is this more important than during the winter, when the vital powers of vegetable life are at a low ebb, and when there is little or no evaporation going on to rid the soil of any excess of moisture it may contain before damage is done. In the case of such plants as Bougainvilleas, Allamandas, Clerodendrons, and others of that class now resting, they will be all the better for being kept as dry as they will bear without shedding their leaves prematurely, so as to induce a thorough ripening of the wood, which may be greatly aided by taking them off the trellises or supports, and suspending the branches up near the glass, that they may derive the full benefit from any sun and light available at this season. Those who are so fortunate as to have established plants of Bougainvillea speciosa in pots, or in positions where their roots are fully under control, and have thereby secured an early maturity of the summer's growth, may soon induce them to emit a profusion of their lovely mauve-coloured bracts by giving them a good soaking of tepid water at the roots, and subjecting them to brisk heat. As this variety flowers on the wood made during the early part of the season, the whole of this should be left intact, except those gross shoots that are not likely to bloom, or where the branches are too thick to be properly disposed of. The best place for training them at this early season is near the roof of the house, in order to give them as much light as possible, without which they do not assume their proper colour, and are not nearly so durable when used in a cut state. By keeping a plant or two in a low temperature, and dry at the roots for the next two months or so, they will come in most opportunely to succeed those now started, and last until the summer-flowering variety takes their place.

Gardenias that have been properly prepared for early blooming by liberal treatment during the summer, and are now well set with buds, should at once be placed where they can enjoy a genial moist heat of from 60° to 70°, according to the state of the weather. In order to render the flowers as lasting as possible when cut, the plants should be ranged close up to the glass, and have air on all favourable occasions, by which means the petals will be much improved in texture, and the size of each individual bloom considerably improved. Gardenias are moisture-loving subjects, and should therefore receive abundant supplies of tepid water. As soon as they are fairly on the move, liquid manure will be found of great assistance to them, provided it be given in a clear state and properly diluted; perhaps of all forms the safest and best to administer to plants is that made from soot, which appears to agree with every kind, and imparts a healthy green tinge to the foliage, which no other stimulant seems to bestow in the same degree. Besides the good effect produced upon plants in general, it has the additional recommendation of not being offensive in odour, and may therefore be used where other kinds of manure-water would be highly objectionable. When in a thoroughly clarified state, soot-water is not only most valuable for administering to the roots, but is equally serviceable for applying overhead through a syringe, as an antidote to thrips, red spider, mealy bug, and other insect-pests, as well as to charge the air with ammonia, and render it more health-giving to the plants. In pits or places where it can be used without being objectionable, a bed of gently-fermenting stable manure placed under the stages where Gardenias are forced, has a most beneficial effect on them by keeping the atmosphere constantly humid, but in all cases where this is used it must be properly prepared by being turned over several times in order to divest it of rank steam. This done it may be used with safety and most advantageously, either alone, or in connection with leaves, to afford bottom-heat in which to plunge the plants, and a bed so formed will be of great assistance in inducing them to flower freely.

Ixoras, so useful for cutting and general decorative purposes, should now receive immediate attention by being partly shaken out of the old soil they are in and re-potted in good fibry peat and sand in sufficient quantity to keep it open and porous. Others not yet cut back, if now operated on in that way, will come in to succeed those just forming their young growth, and be valuable for using in the conservatory or other warm structures. Both mealy bug and thrips are very partial to Ixoras, the former of which entrench themselves in the tops of the young growth, whence it is a most difficult matter to dislodge them without damaging the tender leaves. In cases where any of these pests are known to have effected a footing, the plants should be examined directly they are cut back in order that they

may be thoroughly cleansed while they are in a state to bear handling or to withstand the application of insecticides of sufficient strength to destroy the unwelcome marauders. Abyssinian Mixture or Fowler's Insecticide, at the rate of 4 oz. to 6 oz. to a gallon of soft water heated to a temperature of 95° or 100°, into which the heads of the plants should be dipped, will form the best commencement towards getting them clean, after which a careful sponging and a good syringing will finish the work. The plants after being dipped should be laid on their sides for a few hours to drain to prevent any of the wash from soaking into the soil, where it would be sure to cause injury to the roots, if not their total destruction.

Rivina humilis, one of the most charming decorative plants it is possible to have for use at this season, is just now an attractive ornament in the stove; and if only some means could be used to prevent its brilliant berries from falling off so readily, it would be a great gain, and add much to its value. A good deal may, however, be done in this way by keeping them well up to the light, and never allowing the soil to become at all dry; indeed, if confined to small pots, as they should be, they can scarcely have too much water, and when carrying a full crop of fruit, liquid manure is of the greatest assistance to them. Any that are getting exhausted from berry-bearing, or are becoming at all straggling, should be pruned into shape and kept a little dry till they break again, after which give a very slight shift and place them in light, airy positions to induce a close, short-jointed growth, and enable the flowers to set freely. For table decoration and similar purposes Rivinas are well adapted, especially when grown as standards with clean, straight stems about 1 ft. in height, as then they show off their gracefully drooping racemes of bright shining berries to great advantage. To have them in this form, it is best to sow seed and stop any lateral shoots the young plants may make till they attain the requisite length of stem, when they should be allowed to branch out at the top, after which the stem should be kept clear by rubbing out any growth that may show itself. Thus managed, very symmetrical plants may be formed.

Centropogon Lucyanus.—Where a supply of cut flowers has to be kept up during the winter, this Centropogon will be found one of the most useful plants for the purpose, as it produces its blooms in the freest manner possible, not only from the point of every shoot, but from the axil of almost every leaf down the stem after the top is removed or has faded away. It does equally well in pots or baskets suspended from the roof, and has much of the beauty and general appearance of an Æschynanthus, which is always such a great favourite. Plants obtained now may be propagated to any extent and grown on to a useful flowering size for next season. Cuttings root readily in strong, moist heat, and when rooted should be potted in rough peaty soil, with sufficient sand to keep it open and porous.

Hebeclinium ianthinum.—Where plants of noble aspect are in request for furnishing large conservatories, the Hebeclinium ianthinum should not be lost sight of; as it is one of the easiest managed subjects which it is possible to have, and stands well in a low temperature if the air be kept moderately dry. By propagating it early in the season, there is no difficulty in growing plants from 2 ft. to 3 ft. high, and nearly as much through, within the year; and when each shoot of these loaded with large heads of pale lavender Ageratum-like flowers, they produce a most striking effect. A moist atmosphere, rich, light soil, and an abundant supply of water at the roots, are the chief requisites as regards cultivation. As they will now shortly be showing bloom, liquid manure will be of great service to them, and, unless the plants are in very large pots, they may have it applied almost daily, as it is impossible to give them too much water at this season, or to administer stimulants too frequently.

Begonias of the winter-flowering section should now be placed on shelves or other positions where they can receive plenty of light and be abundantly supplied with water at the roots. For furnishing cut flowers, few kinds surpass the old favourite B. manicata, the gracefully light sprays of which impart quite a finish to any vase or bouquet; but to render them really useful for either of the above purposes, the plants must not be subjected to much heat, and, as observed above, must have a light, airy situation assigned them, that the stems may come stiff and firm, and the flowers assume their proper colour and substance. Tuberous-rooted varieties, such as Weltoniensis, should now be gradually dried off and stored away, as should also the numerous greenhouse kinds, which will be safe in any position out of the reach of frost or drip.

Caladiums, Achimenes, and Gloxinias will be found to winter best in a temperature of from 50° to 60°, and should be left undisturbed in the soil till the time comes round for re-potting. Excepting on very sunshiny days, when the air is soft and mild, very little if any ventilation will now be needed for the next two months, as sufficient air for the well-being of the plants makes its ingress at the laps and other crevices, and to let out the internal heat by opening the sashes beyond what is absolutely necessary is a waste of fuel. A minimum temperature of about 60°, ranging between that and 75°, according to the weather, will be amply sufficient for most of the stove plants till the days again begin to lengthen and afford more light. With a decrease of heat a corresponding reduction of atmospheric moisture must take place, and every care exercised not to overwater. Small low houses, if fitted so as to have some strong, thick, shading material run down on the outside during frosty or cold nights, may be kept much more uniform in temperature with a less amount of fuel than is otherwise requisite.—J. Sheppard, *Woolverstone Park.*

Orchids.

In almost every Orchid-house, no matter how well constructed, certain places may be found which are hotter and drier than the rest. This is perhaps, on the whole, an advantage rather than otherwise, inasmuch as the plants least liable to be affected by heat can be placed in the warmest parts of the house, the rest of which may be rendered beneficial to the others. It will be well, therefore, at this season to endeavour to find out the hotter and the cooler parts, and, having settled these points, to go over the plants and arrange them accordingly. Cypripedium Lowi, C. Stonei, C. Parishi, C. Veitchi, and indeed the Cypripediums generally which continue growing the greater part of the year, will be found to be safe plants to place in the hottest parts of the house (except the section Selenipedium); the Phajus, Calanthes (evergreen), growing Aërides, &c., may be similarly placed; the Phalænopsis should be suspended in the warmest and moistest part, the Cattleyas and Oncidiums in the driest and airiest, and the New Granada plants in the coolest part of the house. The object of the cultivator should be, for the next two months at least, to keep as many of his plants as possible in an inactive condition, for any attempt to force them into growth during that period will be attended with evil results, unless it be in the case of winter-growing plants, and these should, by being placed in the warmest parts of the house and moderately supplied with water, be kept steadily growing. The temperatures during December should be—East India or warm house, 65° by day and 60° at night; Cattleya or intermediate house, 55° by day and 50° at night; Odontoglossum (New Granada) or cool house, 50° by day and 45° at night, the day temperatures being allowed to rise 5° by sun-heat, air being admitted on every occasion when the weather outside will permit. Care should be taken that the temperature of the cold Odontoglossum-house does not at any time get below 45°, as that is the lowest safe temperature to which the plants can be subjected. The Guatemalan Odontoglossums should be wintered in the cooler part of the intermediate-house. Those who have but one house should treat it as an intermediate one.—James O'Brien.

Floral Decorations in November.

November is characterized amongst decorators as the month which provides the smallest number of varieties of flowers. Its mainstay is the Chrysanthemum, which, with its various shades of colour, size, and form, makes up in a great degree for the scarcity of other and brighter-coloured blossoms. Nevertheless, this very scarcity ought to be, and often is, a stimulus to greater exertion of ingenuity in making something worth inspection out of few materials. It is far easier to use too much than too little, both in material and colour, when arranging flowers and foliage in vases, and November exercises a healthy check upon such redundancies. Unless Witsenia is to be met with, I am unable to mention any blue flower now available.

Purple—Aster, Heliotrope, and Violet.
Mauve—Chinese Primrose, Cyclamen, Heath, Neapolitan Violet, and Stokesia.
Pink—Begonia, Bouvardia, Camellia, Chrysanthemum, Chinese Primrose, Epiphyllum, Fuchsia, Rose, Zonal Pelargonium.
Crimson—Bouvardia, Camellia, Carnation, Epiphyllum, Fuchsia, Polyanthus, and Rose.
Scarlet—Bouvardia, Carnation, Epiphyllum, and Zonal Pelargonium.
Orange—Carnation, Chrysanthemum, and Rose.
Yellow—Allamanda, Chrysanthemum, and Rose.
White—Azalea, Begonia, Bouvardia, Camellia, Carnation, Christmas Rose, Chrysanthemum, Chinese Primrose, Cyclamen, Eucharis, Fancy Pelargonium, Gardenia, Roman Hyacinth, Rose, Spiræa, Stephanotis, and Tuberose. —W. T. T.

Indoor Fruit Department.

Pines.—Varieties now swelling off their fruit will need careful attention as regards watering, and should be examined weekly. Let the house be kept at a uniform heat and moderately moist by the use of the watering-pot, and syringe over all available surfaces in fine weather, discontinuing the evaporating troughs, as vapour constantly

rising at this dull season has a great tendency to increase the crowns of the plants and make them unsightly. Do not allow the temperature of the house to fall below 65° at night (and when mild, 70°), with a rise of 10° by day, introducing a little fresh air on favourable occasions. Where there is a superabundance of ripe fruit some can be retarded by placing the plants in a dry, airy house with the temperature at 50°. All fruits now beginning to show should be encouraged by placing the plants in a bottom-heat of 85°, with an atmospheric temperature of 70°, rising 10° by day, as they will come in at a season when they will be greatly prized on account of the scarcity of all other fruits. Where the early Queens are at rest and intended to start, immediately after the shortest day give them a bottom-heat of from 75° to 80°, but if in a light pit or house 60° at night with a rise of 5° by day will be most suitable for them: keep the house moderately dry, only giving the plants just sufficient water to prevent them from becoming dust dry. Admit a little air when the day temperature reaches 65°, and retain the night temperature with the smallest amount of fire-heat possible by the use of mats, or, what is preferable, Frigi domo, which is easily put on, and has a very neat appearance. Strong suckers taken off this autumn and intended for fruiting next autumn should have a temperature of 5° higher by day than that recommended for Queens at rest, allowing the plants more room than those intended to rest over the winter, to prevent them becoming drawn.

Figs.—Late crops will be nearly over now, but where any fruit remains let the atmosphere of the house be kept dry, only admitting air on all favourable occasions, and retaining a night temperature of 60° with a rise of 10° by day. Forward the work in all early houses by cleaning or painting, pruning, cleaning, and properly tying in the trees, root-pruning, examining and putting borders right for the winter; and if any borders are to be added to now is the best time. As heavy mulchings are beneficial to the Fig tree, let the drainage be amply provided for. In the case of such shy bearers as Castle Kennedy it is not necessary to uproot the trees in favour of free-bearing varieties, as buds can with safety be transferred from a growing plant when about 1 in. in length inserted as in the case of the Vine when they take readily; with us here some have grown upwards of 4 ft. this season. Pot plants cleaned and held in readiness for early fruiting may be stored away in any cold house from which severe frost is excluded.

Strawberries.—Those in pots for forcing should no longer be exposed to heavy rains, but placed under cover, in cold pits, Peach-houses, or any structure that will keep them dry. A good batch of the earliest should be plunged in a cold pit made up by leaves giving off a gentle heat, which treatment will insure a potful of roots and prepare them gradually for indoor forcing. Where glass is not at command for covering they may be stored away on their sides by forming pits or stacks and using sawdust as a packing, after which they can be covered with straw or any other loose material that will ward off frost.—J. Hunter, *Lambton Castle.*

Kitchen Garden.

The remarks made at p. 490 as to root-storing are still applicable; and as usually about the middle of the present month sharp frost sets in, such operations should be no longer delayed, for, in addition to the increased labour and trouble attending the digging of them up when the ground is frost-bound, the roots are also liable to injury from the same cause. Possibly severe weather might not continue long; still, it is best to be on the safe side, and, be as it may, in this month sharp weather is in every way desirable: first, to give effectual rest to vegetation of all kinds, and thus lay the foundation for a kindly growth in spring; and secondly, to permit the better performance of many operations that can only be done in comfort when the ground is hard. In open weather much can be done to facilitate spring work, such as making new plantations of Rhubarb, Horseradish, and Seakale, also getting every yard of vacant ground dug or trenched, and edgings and walks put into good order. In making new plantations of Rhubarb, divide the clumps into single crowns and plant in rows 4 ft. apart and 3 ft. asunder, plant from plant. Of course the ground should have been well dressed previously, as Rhubarb will stand and do well in the same position for a dozen years or more, *i.e.*, with ordinary annual dressings. The best variety for all purposes is Myatt's Victoria. Horseradish is of the easiest possible culture, and is on that account generally relegated to the worst corners of the kitchen garden, where it is left to take care of itself. This is all very well if it be only occasionally asked for, but where it is in constant request it should have better treatment; and as the following simple plan of culture will in two years insure roots half as thick as one's wrist, there can be no excuse for having an inferior supply. The ground on which it is to be planted should be deeply trenched, and a good dressing of manure put at the bottom of each trench, then roll or tread the ground till quite firm, and plant the sets with a long dibble in rows 2 ft. asunder, and from 15 in. to 18 in. from set to set. The pieces for planting should be at least 6 in. long, the thickness being immaterial, but any side rootlets or eyes should be taken off to induce a close stem growth without side-shoots, and this also is why I recommend that the manure should be placed quite at the bottom of the trench, for if otherwise, there is a tendency to forked growth; the sets should be covered to a depth of 4 in. If a small plantation were made each year, and a part of the old destroyed, there would never be any lack of excellent roots. All the Seakale roots that are intended to be lifted for forcing may now be dug up and stored away in sand in some cool place, to be potted in successive batches as required, but previous to storing trim off all the superfluous roots and save the best of them for forming a new plantation, which may be done at any time, and in exactly the same manner as that recommended for Horseradish. A first sowing of Peas and Broad Beans may now be made if the soil be favourable for the reception of the seed, but though I recommend this operation I very much doubt whether, all things considered, it is not better to defer sowing till the latter part of January, as I have on one or two occasions from such sowings gathered Peas quite as early as from those sown in November and December, and of course have escaped much annoyance from vermin, which are generally most active amongst such crops in the depth of winter. William the First Pea is a long way in advance of every other early kind; it is a wrinkled marrow of the best quality, and as early as the earliest in cultivation. The best Beans for present sowing are Early Dwarf Cluster and Early Long-pod; a warm sheltered position should be chosen for both crops. Cauliflowers and Early Broccoli will need to be protected, for after so much wet, which has rendered them so succulent, the least frost will injure them if unprotected; therefore, lift them as soon as usable and heel them in in sheds or frames anywhere out of the reach of frost. Very strong-growing late Broccoli should be slightly raised up with a fork to repress growth, and so enable it the better to withstand the winter. Lettuce and other plants for Salading will now require to be under cover, at least such as are required for present use, but of course in open weather full exposure should be the rule, the lights, hurdles, &c., being taken entirely off. Successive batches of Endive, Chicory, and Dandelion should be weekly introduced into the Mushroom-shed to blanch, and the supply of all kinds of Herbs in request should be kept up by potting fresh roots as the old ones become exhausted. A few Potatoes of the Early Ashleaf type should now be planted in pits or in pots; this latter is the plan which I adopt for the earliest batch, planting three sets in an 8-in. pot, which are convenient to move from one house to another as circumstances require, and each pot produces on an average a couple of dishes of tubers.—W. Wildsmith, *Heckfield.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Dead Leaves.—Is it not a mistake at this time of the year to rake out and carry away all dead leaves from under evergreens and other shrubs instead of leaving them to form a protection for the roots during winter? They could be removed in spring with less labour, when the warmth of the sun would render further mulching undesirable.—Enquirer.

The Huon Pine (Dacrydium Franklini), described in the last number of The Garden as a native of New Zealand, should have been assigned to Tasmania, where it was called Franklini, after Sir John Franklin, once Governor of that colony. It does not grow in New Zealand, but on the Huon River of Tasmania, and generally in the west and south-west parts of the island. This is on the authority of Mr. John Davies Enys, who lives in New Zealand, and knows Tasmania, and is now with me in England.—J. J. R.

Memorial Trees.—The planting of a tree to commemorate any incident, such as a birth or wedding in a family, is the expression of a pleasant and proper feeling, and is not practised as often as it ought to be. It would add to the associations which would accompany this tree-planting if children were to assist in the operation, and each tree be known as belonging to some particular child, which would throughout their lives give them a still stronger interest in their homes or the place of their birth.—V.

The Purple Birch.—Many of our readers are familiar with the Purple Beech, which has heretofore stood unapproached by any other purple-foliaged tree. The Purple Birch bids fair to divide honours with it when better known. The habit of this tree is similar to that of the Cut-leaved Birch, the pendulous form of which is so popular throughout the country—but the leaves are entire, larger, and of a colour even deeper than that of the Beech, as ordinarily seen. What makes it more pleasing is the silvery-white bark, which seems to throw out in stronger relief the beauty of its dark, rich leaves.

Oaks Quick-growing.—The unfortunate prejudice that Oaks are the snails of the vegetable creation has been against that use of them as lawn trees which their sterling worth and rugged beauty deserve. Some of the finest Oaks, however, grow as fast as many popular trees whose rate of growth is never considered, or at least objected to—and among their numberless species and varieties kinds may be selected that will thrive in almost any situation.—"Moore's Rural."

THE BROOK-SIDE GARDEN.

Nearly all landscape gardeners, from the days of "Capability Brown," seem to have put a higher value on the lake or fish-pond than on the brook as an ornament to the garden; but, while we allow that many places are enhanced in beauty and dignity by a broad expanse of water, hundreds of pleasing pictures might be formed by taking advantage of a brook as it meanders naturally through woody glade or flowery meadow, lit up here and there by golden sunshine. No such beauty is afforded by a pond or lake, which gives us water in repose—imprisoned water, in fact; and although we obtain breadth by confining it, still, in many cases, we prefer the brook, *i.e.*, water in motion, the beauty of which is seen to advantage as it ripples between Mossy rocks or Rush-fringed banks. The brook-margin, too, offers opportunities to lovers of hardy flowers which few other situations can rival. Hitherto we have only used in and near such places aquatic or bog plants, and of these usually a very meagre selection; but the improvement of the brook-side will be most readily effected by planting the banks with hardy flowers in a tasteful and natural manner—making them a sort of wild garden, in fact. A great number of our finest herbaceous plants, from Irises to Globe-flowers, thrive best in the moist soil found in such positions; numbers of hardy flowers, also, that do not prefer such soil, would exist in perfect health in it. Therefore, the idea of the wild garden illustrated by the water-side is calculated to give us some of the most charming garden pictures. Land plants would have this advantage over water ones, that we could pretty fairly define their position, whereas water plants are apt to spread everywhere, and sometimes one kind exterminates the rest; therefore it might, in many cases, be better not to encourage the water or water-side vegetation, but to form as many little pictures as possible by means of hardy flowers along the banks. The plants, of course, should be such as would grow freely among Grass and take care of themselves. If different types of vegetation were encouraged on each side, the effect would be all the better. The common way of repeating a favourite plant at intervals would of course be ruinous. Some parts it might be desirable to leave unplanted, with the smooth Grass running close down to the brink of the water.

The Brook.

Need of Variety in Planting.—The difference in habit, in the size, mode of arrangement, and forms of branching and of foliage are absolutely innumerable. It needs but to walk through a well-selected collection to have one's interest aroused at every turn. Landscape gardeners avail themselves of a few of the more prominent and commoner types, but even they seem to have a very restricted idea of the prodigious wealth of form and habit which lies open to their selection. If proprietors and gentlemen engaged in planting would take the trouble to make inquiries, or, better still, to see for themselves, they would insensibly learn to take the same sort of interest in the individual trees and shrubs of their plantations that they do in their horses, their dogs, or their shorthorns, to the great increase of their own enjoyment, and to the general increase of the beauty of their estates. There is absolutely no reason for the exclusive plantation of common Limes, Elms, and Planes. These are valuable and useful enough, but there is plenty of room for the introduction of a large and varied contingent of other not less hardy and more interesting and beautiful trees.—"Gardeners' Chronicle."

Effect of Music on Plants.—In the dearth of original ideas, the following may not be without interest: When a young man of nineteen, residing in Portugal, I was, on account of ill-health, ordered by my medical advisers to remove to a drier district. I went from Lisbon to Trefaria, on the other side of the Tagus, opposite Belem. The soil here—even of the mountains—was entirely of sand, and so sterile that in the whole neighbourhood there is not a scrap of vegetation to be seen. I lived in a small house with some fishermen, and, on becoming convalescent, I had a greenhouse built, and cultivated Roses and many other flowers known in this country. They did not, however, thrive well. I had an harmonium, which—with the view of enjoying the cooler atmosphere of the greenhouse—I had removed thither, and so for some months largely indulged in music. I was surprised to observe a gradual, yet rapid, recovery of health on the part of my plants. I should like to know if any of your readers have ever had a similar experience? The recovery was so marked that I have often thought it quite possible to impute it to the influ-

ence of the music. The whole country, as I have said, was barren and, with the exception of a few sparrows, entirely void of bird life and song. I have often thought that in this fact there might lurk a proof that music was, to some extent, a necessity of vegetable life at least; that music, the song of birds especially, was conducive to the health of plants; or, I may otherwise state it, that Nature is not complete without music. So writes a correspondent of the "English Mechanic." A friend, on reading the above, suggests that the fine development of the trees in some of our squares may now be easily accounted for, seeing that there are so many organ-grinders!

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Ground-work.—Whatever additions to, or alterations in, lawns, shrubberies, walk-making, re-laying of turf, &c., are necessary, should be proceeded with without delay, so as to complete them if possible before the close of the year. Where the preparation of ground and planting are not finished before Christmas (after which time severe and protracted frost frequently sets in, preventing the completion of the work until the beginning or middle of March), all trees and shrubs of a deciduous nature will not make nearly the progress during the ensuing summer that they would if moved earlier. From the time that there is the slightest disposition in the buds to swell—which with many plants commences early in March—the mutilation of the roots, more or less inseparable from removal, has a much greater influence in limiting the growing powers of the plants during the ensuing season than if the transplanting took place early in the dormant period, by which means the roots would be in a position to make some effort to answer the call made upon them by leaf development. Where the preparation of the ground for new lawns, or additions to existing ones, is carried out sufficiently early in the autumn to allow the necessary settling of the newly-moved soil, so that the turf can be laid before the commencement of the new year, the Grass will grow better with half the labour in watering that is necessary to keep it alive when not put down until later on, to say nothing of the much improved appearance it will have during the following summer.

Roses.—Where any addition is to be made to the collection of Roses it is important that they should be planted immediately, as they will grow much better if moved at once than if the planting be deferred until later; this injunction also applies to those that have to be taken up for the removal of suckers from the roots; this is especially necessary with standards that are on Brier stocks, as, if not taken up every three or four years, they usually have such a disposition to produce suckers as to be very troublesome in their future growth, and even when these are attentively removed, the energies of the roots are so persistently directed in the formation of them as to interfere seriously with the production of flowering shoots. They should be taken up carefully, first removing the soil with a fork so as to preserve the fibres from mutilation as much as possible; the strong underground shoots that produce the suckers will easily be detected from the thinner feeding roots; they should be cut off as close as the knife can go, as there are generally several eyes round the immediate base of each of these sucker-shoots, which, if not removed entirely, will push up during the summer. Where this has to be done partial measures should not be allowed, for the whole ought to be taken up and examined or it will necessitate piecemeal repetition in the course of another year or two. When all are taken up an opportunity is given for thoroughly digging and manuring the ground. The best way is to operate upon each plant as it is lifted, and to lay the whole down on a piece of spare ground, covering the roots with any loose material, such as leaf-soil, or even newly-fallen leaves, or litter will do if it be damp; this will be less likely to break the small fibrous roots than heavy soil would be, and it is on the retention uninjured of these small fibres that the next season's crop of flowers in a great measure depends. Re-plant immediately the ground is prepared, staking each plant firmly as soon as it is reinstated in its place, and mulching the surface over the roots with half-rotten manure, or a mixture of manure and leaf-mould. It is advisable to do this with all newly-planted Roses, but particularly such as are on the Dog Rose, for on no account must these be planted deeply. In this matter, mistakes are frequently made by those who have not had much experience, or taken the trouble to see how this Wild Rose grows in its self-sown, self-selected situation, often on a bank by the side of a ditch which secures a dry bed. Here, the roots, if examined, will be found almost exclusively running not more than 3 in. or 4 in. below the surface. It is very far from advisable to counsel in all cases a close imitation of Nature in the treatment we give to cultivated plants, but in this matter of keeping the roots of this Brier sufficiently near the surface, Nature must be implicitly followed or failure is certain, particularly where the soil is of a heavy description, such as the Dog Rose delights in.

Planting Fruit Trees.—The planting of fruit trees should never by any means be delayed until the spring, particularly if they exceed in size the smallest sent out by nurserymen. With bush fruits, Gooseberries, Currants, and Raspberries, the beneficial effect of early planting is even still more apparent, as these, particularly Gooseberries, are amongst the earliest to commence growth in the spring, and with them no amount of after attention through the season in the matters watering and mulching will compensate for late removal. Newly-planted fruit trees should be mulched with a few inches of any light open material that will prevent frost from congealing the soil surrounding the roots, for although a plant may be so hardy that it would not receive the slightest injury from its roots being frozen when thoroughly established, yet such is by no means the case when it has been subjected to the mutilation inseparable from transplanting, even when removal has been effected with the greatest care. Another matter worthy of consideration in getting all such work completed early is that there is no interference with the usual routine of gardening operations. Instances frequently come under my observation of places where there is every year some alteration to be made, and yet it is never commenced till the time it ought to be finished; the result is that the ordinary spring work is delayed beyond its time, to the consequent confusion all through the summer. See that all newly-moved trees and shrubs, sufficiently large to be acted upon by the wind, are securely staked, but in carrying out this avoid the frequent mistake of driving a thick stake down so close to the stem as to seriously injure the roots. When a single stake is used for this purpose, driven straight down, it is in the worst possible position for resisting the force of the wind, and consequently it requires to be three times the strength that would suffice if better placed. In the case of all trees that have heads large enough to be affected by high winds, three stakes should be driven into the ground some 18 in. or 2 ft. from the collar of the tree, at an angle of about 75°, fixed so as to bring their heads together up to the stem, where they should be secured with a stout straw or hay-rope entwined around them, in order to preserve the bark from being chafed by rubbing against them. Where the stakes are fixed in this position, it is not necessary that they should be so long, or come so high up the stem of the tree, as when one strong stake only is employed.

Asparagus Beds should now be well examined, removing by hand any weeds that may be upon them, after which spread over them 1 in., 2 in., or 3 in. of manure and 1 in. of soil; but do not dig deep into the alleys for the soil thus required, as is frequently done, by which the roots of the outside rows are so cut with the spade as to injure them.

Rhubarb and Seakale.—Where Rhubarb and Seakale are required early in the season, roots of both should be immediately put in to force; in taking these up, they are often so treated as to lead to the supposition that those engaged in the work were under the impression that nothing but the crowns were of use, and that the whole of the roots might be cut away without interfering with the produce. It is not possible or necessary to attempt to preserve all the small feeding roots intact, yet a fair proportion of these should be attached to the crowns, otherwise, in the case of Seakale, after the first growths are cut, they will produce no second shoots strong enough for use; and Rhubarb in like manner, when nothing more than the bare crowns are used, makes comparatively weak growth after the first stalks are gathered. The quality of both Rhubarb and Seakale is very much influenced by the way in which it is grown; when forced in a Mushroom-house, where there is a considerable body of fermenting manure, or with pots placed over the crowns with warm manure, or a mixture of manure and leaves over them in the old-fashioned way, the flavour of the produce is always more or less affected. It is far better to make up a bed of clean leaves alone about 2½ ft. in thickness, using them in a sufficiently damp state to ferment; on this put 6 in. of soil, on which place the roots, and fill up with more soil, using an ordinary garden frame, but instead of lights, shutters or boards covered with mats or leaves to exclude the light.

The Man-eating Tree.—Will you kindly inform me where I can obtain particulars of the so-called Man-eating Tree? and at the same time will you state whether or not you consider the account trustworthy? I have been told that no such tree is to be found anywhere except in the imagination of some easily-imposed-upon travellers.—O. W. R. W., *Surbiton*. [The account of the Man-eating Tree was a stupid hoax, suggested by the essays that have been published on insect-eating plants.]

THE KITCHEN GARDEN.

WATERING KITCHEN GARDENS.

This is a subject to which more than ordinary attention should be paid, inasmuch as in many districts kitchen garden crops suffer considerably from drought during the dry summers. Therefore in choosing a site for a new garden the means by which it is to be watered during dry weather must not be overlooked. In some parts artificial watering is seldom resorted to, nor is it needed; but in naturally dry localities deep cultivation affords in some measure a substitute for the watering-pot. Unfortunately, however, deep soils do not everywhere exist, and in such cases arrangements should be made for supplying water in some practical manner. Where there is a running stream, as sometimes happens, advantage should be taken of it to irrigate the garden; but where this is impracticable from the low situation of the water, recourse must be had to pumping or carrying. Where, however, there is no stream or other convenient way of obtaining water, a well must be sunk, and to do this in some parts of the country is no easy matter. A little expense, however, must not be thought of if a good and productive garden is the object in view. After the well has been sunk, a pump will be needed to throw the water from the well into a tank placed some few feet above the level of the highest part of the ground. If a main pipe be then laid from this tank down the centre of the garden, branch pipes or wooden troughs may be laid from it to conduct the water into tanks distributed about the garden; or better still, means may be provided for watering with a hose. This is the best and easiest way of watering, and in some cases even better than irrigation, as in the latter case all the crops have to be watered, whether water is necessary or not, whereas by the former method any part can be watered separately, and the plants sprinkled overhead, an operation that is in many cases more beneficial to vegetation than root watering. Whenever water is given to any kind of crop, it should always be of a temperature if possible within a few degrees of that of the soil to which it is to be applied, for it is a well-known fact that to water any crops in summer with very cold water is injurious rather than beneficial to them. Any tank or reservoir for the retention of water should, therefore, be placed in such a situation as will expose the water as much as possible to the influence of the sun, and if kept constantly full the difference between the temperature of the water and that of the soil during the summer will be but slight. One more remark of some importance with regard to water, is that whenever root-watering is attempted, it should be done thoroughly, or not at all; surface-watering only serves to keep the roots near the top, where, if allowed to get dry—which they soon do if watering be neglected for a time—they become scorched by the hot sun, and the evil effects of such treatment soon become visible. Deep culture and thorough watering are two of the principal essentials to the successful growth of all kitchen-garden crops, and therefore both should receive more attention than they now do in the majority of places. K.

PARSLEY—ITS CULTURE AND VARIETIES.

There are several varieties, or rather selections, of Parsley in cultivation, each grower having his own Double or Treble Curled to recommend, and doubtless great improvements have been made in its quality and appearance; but of really distinct kinds there are but few. The principal kind now in cultivation is the Dwarf Curled, a handsome variety, which grows close to the ground, and does not readily run to seed. A variety called Carter's Fern-leaved is a very handsome kind, and much used for garnishing; but for general purposes the Dwarf Curled is perhaps on the whole the best. There are, moreover, the Napoleon or Celery-leaved Parsley and the Hamburgh Parsley. The former is cultivated for its leaf-stalks, which are blanched and used in the same way as Celery, and the latter is grown for the sake of its roots, which are eaten like Parsnips. Neither of these two varieties are, however, of much value, and therefore they are seldom found in gardens. Though the culture of Parsley is very simple, yet to have an abundant supply of it all the year round is often attended with some difficulty, where spare lights are not available for this purpose, and especially in low-lying, moist situations. On cold, stiff, retentive soils it frequently dies off. It can be grown successfully in any light, rich ground that has a dry, porous sub-soil. To meet a constant demand, three or four successive sowings should be made from February to May. The seed should be sown in very shallow drills, and be very lightly covered. When the young plants are up and large enough to handle they should be thinned to 6 in. distance in the rows. The first sowing or two will furnish leaves through the summer and autumn, and with care and a little management through the winter, but sowings made in May for a supply in winter is preferable. A dry border should be chosen for it, and where there is a south wall a little sown at the foot of it will always be useful in spring. Before severe frosts set in ample provision should be made for thoroughly protecting a portion sufficiently large to furnish a supply of leaves during several weeks' frost. The coverings should only be put on in frosty weather, and in mild open weather the plants should be exposed. The difficulty of having a supply during winter is experienced where there are no spare lights available for protection, and where the soil is of a heavy, retentive nature. Many ways will occur to an intelligent mind to meet these difficulties. Where the soil is unfavourable a site should be chosen in some sheltered part of the garden, and a bed should be prepared specially for it by putting a quantity of stone and brick rubbish at the bottom, and on this some soil suitable for the purpose. A sowing made on this towards the end of May, if carefully attended to during the summer months in thinning the plants and picking off any luxuriant leaves that may be produced, will furnish a supply during the winter provided it has some protection from frost. The Celery-leaved Parsley may be sown broadcast in an open border in April, and transplanted when the plants are 5 in. or 6 in. high into trenches in the same manner as Celery, excepting that the trenches need not be so deep nor so wide apart—2 ft. will be ample. The after treatment is exactly the same as that of Celery, only that it does not need quite so much moisture at the root. Hamburgh Parsley grows best in a deep, sandy soil, rather poor than otherwise. Sown in drills from March to May, thin to 1 ft. apart when the plants are large enough, dig it up in November, and house it in sand or dry earth, or protect it out-of-doors in the same way as Parsnips are preserved. S.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Snail-infested Cucumbers.—The Cucumber-house at Gunnersbury is overrun by a snail which, though very small, does a great deal of mischief by eating off the fleshy roots of the plants, and sometimes boring right through the bases of the stems. Its name is Bulimus acutus, and so plentiful is it in the soil of the bed that the Cucumber plants have to be grown in pots in order to make sure of a supply.—S.

Ox-Celery!—"Moore's Rural" states that a hot extract of Celery mixed with Liebig's meat extract is sold under the name of Ox-celery. It is a nourishing drink at lunch time (far better than coffee or tea), and is doing a great deal in this neighbourhood to promote temperance!

Millet (Panicum miliaceum).—Many different plants belonging to the Grasses yield the grain known as Millet. Some varieties of Sorghum cultivated in West Africa and Southern Europe, afford excellent grain. The Sugar Grass of China is also a Sorghum, whilst species of Setaria and Panicum are widely cultivated in Central and Southern Europe. Millet grain is used for human food chiefly in hot countries. It may be made into a kind of bread, quite equal, so far as its composition shows, to wheaten bread.—A. H. Church.

Protecting Mushrooms from Woodlice and Slugs.—How very annoying it is when a Mushroom bed comes into bearing, to see every little head, half, if not altogether, eaten off either by woodlice or slugs! Many a time have I gone, lantern in hand, inspecting the beds for slugs, and found some, even after the most careful cleaning and lime-washing. The roughest sawdust, about 2 in. in thickness, placed over the beds, proved the best protection I ever tried both against woodlice and slugs. Neither of them like to travel over dry sawdust. And Mushrooms, before fit for use, are sure to push up quite enough through the sawdust to let a person know where they are; indeed, they generally throw themselves right above the sawdust before they are the size of a crown piece. Should the beds require to be watered, it is best to clean the sawdust completely off, then water according to need: let the surface dry as much as possible before returning the covering, as the sawdust, to do good service, cannot be too dry.—G. Dawson, in "Irish Farmers' Gazette."

Large Gourds.—At the Bristol Horticultural Society's Show, which took place the other day, Mr. Prestige, of that town, exhibited a pair of Gourds which weighed 96 lb. and 81 lb. respectively.

Golden Globe Savoy.—This is well worth the attention of market growers; it is an enlarged and richly-coloured form of the Dwarf Green Curled Savoy, and is just now in perfection. When full-grown heads are matured, the outer green leaves curl back and expose to view a centre of a delicate golden tint, quite solid and delicious.—D.

PLATE XLIX.

THE IRISES.

(WITH A COLOURED FIGURE OF IRIS IBERICA).

Drawn by J. L. Macfarlane.

The very name Iris suggests something uncommon and agreeable in colours, and truly one may say that in variety of brilliant hues and tints, and striking contrasts of colour, few families equal and none surpass the Iris family. Turner, who prided himself—and, indeed, justly so—on raising the study of plants above the superstitions of previous herbalists in this country, writing upwards of 300 years ago, says of the genus Iris, "This hath his name of ye likenes that it hath of ye rayn bow, for Iris is called ye rayn bow." By some they have been compared to Orchids; and those who delight in singular and beautiful combinations of colour, and to whom the pleasures of greenhouses and hothouses are denied, may find a good substitute in the cultivation of a selection of the varieties of hardy Irises. Being hardy, and many of them natives of countries easily accessible to our forefathers, they were among the first plants cultivated for ornament, and the virtues ascribed to their flowers and roots were numerous; but, as in the case of many other plants, they were chiefly founded upon nothing more substantial than some external resemblance. Gerard's catalogue includes many species of Iris, and his "Herbal" contains figures of nearly a dozen; and Philip Miller, in his "Icones," one of the first English publications containing coloured figures of plants, gives portraits of some. These early writers gave various English names to different species, but both Gladdon and Flower-de-luce were employed generically. Parkinson, in his "Paradisus," calls the common German Iris Blewflourdelyce, a method of combining several words into one, which gives the German language of the present time so formidable an appearance; but to return. The genus Iris proper is peculiar, in a wild state, to the Northern Hemisphere, but many species now referred to other genera were formerly included in it. Thus the Cape genus Moræa and Peacock Irises (species of Viousseuxia) will be found in the older books under the genus Iris. In the following enumeration I have included, besides the true Irises, the species of Xiphion and Dietes. The former differ from the true Irises in having bulbous root-stocks, and the latter, which are from the Southern Hemisphere, in the structure of the flower, described further on. Mr. Baker, who deserves the thanks of all horticulturists, as well as botanists, for his labours in the petaloid monocotyledons, is now publishing a monograph of the Irises in the "Gardeners' Chronicle." Of this, as far as it has appeared, I have made free use, following very closely the arrangement adopted there; and Mr. Baker kindly permitted me to consult his yet unpublished catalogue for the synonymy of the other species. The characters by which the species of Iris are distinguished from each other are not difficult to seize. They are mostly pointed out in the descriptions of the sub-genera and sections below, but there are two or three peculiar characters in the flowers of Irids, modifications of which furnish the distinctive marks of species, that I should like to mention here. The perianth or floral envelope consists of two series, three in each series or whorl, of coloured parts; those of the inner series being usually different in shape from those of the outer, and standing up erect, whilst the outer ones spread out horizontally, or are more or less reflexed. I have followed Mr. Baker in using Miller's terms of standards and falls for the inner and outer petals. The falls are either crested, bearded, or naked—characters of importance in distinguishing species. Besides the two series of petal-like parts of the flower described, there are within these three others, large or small, petaloid organs, each one overarching a stamen, and often curved down over the fall. These are the stigmas of the pistil, and are concerned in the reproduction of the plant. I mention this structural peculiarity here because it is so different from anything we find in other plants, even those closely related. With one or two exceptions the descriptions are limited to the general characters of the species, though many of them present a large number of varieties. If the object in forming a collection of Irises be to obtain a succession of showy, free-flowering varieties, it will be advisable to limit it to a selection of the varieties of a few species. A judiciously-formed collection will include sorts that commence blooming at the latter end of February or beginning of March, followed up by others in succession till the end of summer. The following are some of the species to bear in mind:—I. pumila, persica, germanica, lævigata (Kæmpferi), iberica, Xiphion, and Xiphioides. Figures, descriptions, and articles on the cultivation of most of these, will be found scattered through the pages of the The Garden, consequently I do no more than allude to them here. Named varieties of aphylla, amœna, variegata, squalens, pallida, sibirica, and other species, are described in florists' catalogues. In regard to height, different species vary from 4 in. or 5 in. to 4 ft. or 5 ft., and in size of the flowers, from 1 in. to 6 in. across or deep. Of the colouring of the latter sufficient has been said, but I may add that persica, reticulata, and several others, exhale a delicious odour. Let us now pass to the consideration of the different groups of species.

Sub-genus I.—Xiphion.

[The species belonging here differ from the true Irises in having a bulbous root-stock. They may be arranged under three different sections characterized by the nature of the flower.]

§ 1. Euxiphion.

Inner segments of the perianth (floral envelope) erect, nearly as long as the outer; filaments free.

1. Spanish Iris (I. Xiphion, *L.*, Bot. Mag., t. 686; I. variabilis, *Jacq.*).—This and the next species were among the first cultivated, and both of them present a number of varieties differing chiefly from each other in the colours of their flowers. They are easily distinguished from all the other bulbous species in having no tubular portion to the flower. In this the limb or spreading part of the falls is shorter than the claw. The membranous coats of the bulb are of a dark brown, and the lowermost linear or rounded leaves are about 1 ft. long, the flower-stem rising from 1 ft. to 2 ft. high. In the common variety the flowers are deep purple with a band of bright yellow down the centre of the falls, but, as already observed, the species embraces a wide range of varieties, among them a white one. I. lusitanica (Bot. Mag., t. 679) is a marked wild variety with bright yellow flowers, and I. sordidum has yellow flowers suffused with brown. The typical variety is a native of Spain from the coast to an altitude of 6000 ft.; it is also found in Corsica and the south of France. I. lusitanica is a native of Portugal, and is found near Cintra. The Spanish Iris has been in our gardens for nearly or quite three centuries, and is included in Gerard's catalogue of the plants he had growing in his garden in Holborn in 1596. It flowers in June, and succeeds best in a light rich soil.

2. English Iris (I. Xiphioides).—The name English Iris is retained here because it has been in use ever since the species has been cultivated, not because it is an appropriate one. The name Pyrenean Iris would be more correct, as it inhabits both the French and Spanish slopes of the Pyrenees. It is a stouter plant than the preceding, and usually commences to unfold its flowers about the time the other is over. In this, moreover, the limb of the falls is longer than the claw. The flowers vary in colour, from white, various shades of lilac, to a deep purple with a yellow keel, and Mr. Baker mentions a very fine white variety mottled with crimson. I. spectabilis of Spach Mr. Baker thinks may be a hybrid between this and the foregoing.

3. Mount Lebanon Iris (I. Histrio, Bot. Mag., t. 6033).—This, as well as the following four species, has membranous coats to the bulbs, and there is a distinct tubular portion at the base of the flower. It does not appear to be in cultivation in this country. The Bot. Mag. figure was drawn from specimens sent to Dr. Hooker from Switzerland by Mr. Boissier, who received it some years previously from Mount Gerizim, on the Lebanon range. It is a very distinct and showy species, of stemless habit, with a solitary lilac-purple flower, sessile in the centre of each tuft of leaves. The falls are copiously spotted and streaked with lilac-purple on a paler ground, and faintly keeled with yellow down the face. At Geneva it shows its flowers in the first week in February, when the leaves of reticulatum are just pushing through the soil, and it is quite destitute of the delightful Violet fragrance that is one of the principal merits of its better-known relative.

4. Algerian Iris (I. Fontanesi, *Godron*).—This scarcely differs from the Spanish Iris, except in having a cylindrical tubular portion to the flowers. A native of Algeria, not in cultivation.

IRIS. IBERICA.

5. Gibraltar Iris (I. filifolia, Bot. Mag., t. 5928, *Boiss.*; Xiphion tingitanum, Bot. Mag., t. 5981).—A fine species, with a slender stem 1 ft. to 2 ft. high, filiform leaves, flattened at the base, and mottled with purple on a green ground. It is a native of the south of Spain and north-western Africa, and was introduced into English gardens from Gibraltar by Mr. G. Maw in 1869. The deep brilliant purple of the flowers, brought into relief by the bright yellow spot at the base of the falls, renders it a very striking species. The Tangiers plant (Bot. Mag. 5981) is a variety with broader leaves and larger flowers, which was discovered by Sir J. Drummond Hay, who sent bulbs to Kew.

6. Rush-leaved Iris (I. juncea, Bot. Mag., t. 5890; I. mauritanica, Bot. Mag., t. 986).—Slender terete leaves and pale, primrose-yellow flowers characterise this species. It was in cultivation in early times, but has never become common. A native of Italy and some parts of the African shores of the Mediterranean.

7. Tangiers Iris (I. tingitanum).—This was discovered by Salzmann in meadows near Tangiers, and is not yet in cultivation. It is of robust habit with broader leaves than its immediate allies possess, though Mr. Baker thinks it may possibly prove to be a variety of the Algerian Iris.

8. Netted Iris (I. reticulata, Bot. Mag., t. 5577).—This species and the next one differ from all those described above in the coats of the bulbs being fibrous instead of membranous. It is almost or quite stemless, and is very valuable on account of its early flowering season. In warm, dry soils it produces its flowers in February and March, and in its native country, Asia Minor, it is always found high up on the mountains. Flowers very fragrant, solitary, and sessile in the rosettes of leaves, deep violet-purple, falls paler, spotted with violet, and furnished with a yellow line down the centre. The variety figured by Sweet ("Flower Garden," series 2, t. 189), and Loddiges (Bot. Cab. t. 1829) is the I. Krelagei of Regel, with nearly scentless, less brilliantly-coloured flowers. It was introduced from Iberia in 1821.

9. Abyssinian Iris (I. diversifolia).—A very distinct species inhabiting the mountains of Abyssinia, of which only dried specimens are known in this country.

§ 2. Gynandriris.

This section consists of a single species, in which the inner perianth segments are erect, and the filaments united in a tube in the lower half.

10. Fugacious Iris (I. Sisyrinchium, Bot. Mag. t. 6076; Xiphion, Bot. Mag., t. 1407; Moræa (Morœa tenoreana), Sweet's "Flower Garden," t. 110).—A dwarf species with fibrous-coated bulbs, a pair of narrow, linear leaves, and small lilac-blue and yellow flowers of very short duration. Although known to the earliest horticulturists, it has never been a favourite, on account of the very evanescent character of its flowers. It is widely dispersed in the Mediterranean region.

§ 3. Juno.

The species of this section differs from those of the foregoing in the inner segments of the perianth being very small and spread out horizontally between the outer ones. Of the seven species belonging here the first four are stemless, and the others have a distinct stem.

11. Poiret's Iris (I. alata, Bot. Reg., t. 1876).—A showy species, native of the shores of the Mediterranean Sea, introduced into this country early in the present century. It has rather large (2 in. thick) membranous-coated bulbs, and fleshy roots, surmounted by a rosette of about half-a-dozen lanceolate leaves, 1 in. broad and less than 1 ft. long, and one or sometimes two sessile, large flowers. The tube of the flower is from 3 in. to 6 in. long, and the lilac-purple limb about 3 in. deep. The falls are bright yellow towards the throat of the tube, as are also the anthers. One of the most striking species of the section, the flowers often being 8 in. or 9 in. long. In some books this and other species are described as having a stem, but it is the long tube of the flower which bears the limb aloft.

12. Persian Iris (I. persica, Bot. Mag., t. 1).—It is worthy of remark that this species forms the subject of the first plate of the "Botanical Magazine," a work that has been continued almost interruptedly for nearly a century, and now contains nearly 6300 coloured figures of plants. This instance of longevity of a botanical periodical is, I believe, without a parallel. The Persian Iris has bulbs 1 in. thick, clothed with brown, membranous coats and a tuft of short, narrow leaves, not fully developed at the time the plant flowers, and eventually attaining a length of only about 4 in. or 5 in. The flowers are of medium size, lilac-purple tinged with yellow at the base of the falls, which have a bright yellow, beardless keel. A native of Asia Minor and Persia, where it is found at an elevation of 6000 ft. It is very fragrant, and flowers in warm situations, in a well-drained soil, in March or earlier. This, and most of the others of this class, are well adapted for pot culture or growing in vases like Hyacinths. Introduced into England about the year 1627.

13. Palestine Iris (I. palæstina).—A yellow-flowered species, in the way of I. alatum, but having smaller flowers. It is a native of Hebron, Sharon, and other interesting localities in the Holy Land, but living plants have not yet been introduced.

14. Caucasian Iris (I. caucasica, Sweet's "Flower Garden," t. 255).—A hardier species than the Persian Iris, but destitute of fragrance. The flowers are pale yellow, and appear in early spring. It inhabits the mountains of Asia Minor and the adjacent countries, ascending to an elevation of from 7000 ft. to 8000 ft.

15. Aitchison's Iris (I. Aitchisoni).—This and the two next produce a distinct stem. An interesting discovery by Dr. Aitchison in 1874, in north-western India. The flowers are bright lilac-purple, with yellow bands. There is also a yellow-flowered variety in Kew Herbarium not yet introduced.

16. Stocks' Iris (I. Stocksi).—A native of the dry, shingly hills on the borders of Affghanistan and Beloochistan, not in cultivation. It has pale, yellow flowers, and a short, stout stem.

17. Aucher's Iris (I. Aucheri).—This also is a yellow-flowered species, and, like its immediate allies, has not yet been introduced. A native of the neighbourhood of Aleppo, first collected by Aucher-Eloy.

This concludes the bulbous-rooted Irises.

Sub-genus II.—Euiris.

[With the exception of the one species belonging to the first section, all the true Irises have a more or less thick, creeping root-stock, termed a rhizome.]

§ 1. Hermodactylus.

Root-stock consisting of small, digitate tubers.

18. Tuberous Iris (I. tuberosa, Bot. Mag., t. 731).—This species has lurid purple flowers, borne singly on weak, slender, leafy stems, about 1 ft. high; the upper stem-clasping leaves overtop the flowers. The claws of the falls are yellow on both sides, as well as the anthers. This plant is included in Gerarde's catalogue, and Parkinson gives a figure of it in his "Paradisus." A native of the south of Europe, from France to Greece, and quite hardy in this country, where it flowers in April and May, but rarely produces seed. In the second series of Sweet's "Flower Garden," t. 146, under the names of Hermodactylus longifolius, repens, and bispathaceus, this is divided into three species, which Mr. Baker regards as varieties of one. H. repens is the ordinary wild type; H. bispathaceus has two spathes, as figured in the Bot. Mag.; and H. longifolius has unusually long leaves.

§ 2. Oncocyclus.

Falls obscurely hairy down the throat; standards at least as large as the falls.

19. Susian Iris (I. susiana, Bot. Mag., t. 91).—This is so distinct from all others of this group, and, indeed, from all other Irises, that a general description of its flowers will enable any one to recognise it at once. These are among the largest of the genus, the limb being 3 in. deep, with standards and falls similar in size and shape, and from 2 in. to 3 in. broad, with dense, fine spots, and lines of brown-black on a white ground tinged with lilac. Unfortunately the flowers, which appear in April and May, are scentless and rather fugitive. It is on record that this Iris was introduced into Europe in 1573, and it was among those cultivated by Gerard, and figured in his "Herbal." The stems are one-flowered, and from 1 ft. to 1½ ft. high, and the leaves are nearly as tall, about 1 in. wide, and bordered with white. A native of Mesopotamia and Syria. There is a variety called livida, of more slender habit, with narrower leaves, and smaller more livid, less-veined flowers.

20. Iberian Iris (I. iberica, *Hoffmann*).—This grand acquisition to our gardens is not less variable than any other species of the genus, and all of the varieties I have seen have handsome flowers. It appears that no two seedlings of this plant are exactly alike in the size and colouring of their flowers, for all the published figures differ more or less from each other while preserving the main features. By those who have had practical experience in its culture it is stated to be somewhat difficult to get it to bloom freely; but that may yet be overcome. It is a native of the Iberian provinces of the Caucasus and Imeretia. The first figure of it appeared in Regel's "Gartenflora," in 1863, t. 386. Two varieties are there depicted—Hoffman's typical plant, and a variety called

ochracea. These were prepared from drawings received by Dr. Regel from a correspondent resident in Tiflis. At that time, although a great many root-stocks of the species had been distributed by the Botanic Society of St. Petersburgh, nobody, to Dr. Regel's knowledge, had succeeded in flowering it. What Dr. Regel regards as the typical variety ("Gartenflora" t. 386, f. 1) has flowers nearly 5 in. deep from the summit of the standards to the tips of the falls. Both standards and falls are, however, less elegant in outline than those of varieties subsequently raised, of which the one portrayed here may be regarded as a good illustration, though not so large as some others. The colouring of Regel's type-plant is even more inferior than the form of the flowers; the standards being of a dirty white or stone colour slightly speckled and veined in the lower part with dull purple-brown; and the falls, which are pointed, not rounded as in the variety figured here, are of a reddish-brown, or almost fawn-coloured, with dull purple veins and centre; and the petaloids, which are bent down over the falls, are yellow and purple brown. The variety ochracea has smaller standards, and the falls have a greater infusion of yellow in their colouring. In 1872, Dr. Regel published another figure ("Gartenflora, t. 713) from cultivated specimens, with an observation in the text to the effect that the previous figures by no means did justice to the beauty of the species. This figure approaches very closely in the shape of the parts of the flower to our plant, but in the colouring it is quite distinct. The standards are veined with bright red-purple on a greyish ground, and the colour of the falls is almost the same as in ours, except that the red element predominates. A figure in the "Flore des Serres," t. 1963, represents a large-flowered variety, in which the white standards are suffused and spotted with red. A variety figured in the "Floral Magazine," new series, t. 168, has flowers nearly 6 in. deep; the standards beautifully veined with lilac, and the falls thickly spotted with red and yellow, with a central deep dark purple blotch. In the "Botanical Magazine," t. 5847, is a variety with snowy-white standards, and the falls are veined with very dark purple or purple-black on a yellow ground, and the central spot is a rich, polished purple, and the overhanging stigmas are of a foxy brown. Finally, in the "Illustration Horticole," 1872, t. 106, I find a variety almost exactly like one represented here in the falls, whilst the white standards are veined with red. Thus it will be seen that we have in this species a wealth of colour almost equal to that of the whole genus; a race of dwarf, compact-growing, summer-flowering Irises unsurpassed by any others. The only drawback is the short duration of the flowers; but the flowers of the varieties of the Iberian Iris have more substance and are less fugitive than those of the allied I. susiana. Mr. Baker tells me that I. Saari, which is in cultivation on the Continent, is also a very grand thing, but I have not seen living specimens. The Iberian Iris was introduced by Mr. Ware, Tottenham.

21. Schott's Iris (I. Saari).—A native of Persia or Armenia, and a well-marked species nearest iberica, from which it differs in its bright lilac flowers, and ascending, oblong, not obovate, falls with much stronger hairs at their throat.

22. The Puzzling Iris (I. paradoxa, Regel's "Gartenflora," t. 386).—The general habit of this plant is quite that of iberica, but this and the next differ from all other Irises by having the falls decidedly smaller than the standards. In this the standards are as large as those of iberica, whilst the falls are reduced to a strap-shaped, hairy claw about 1 in. long and the smallest rudiment of a blade. The standards exhibit every shade of colour, from white to bright violet-purple and claret-purple; and, as Mr. Baker observes, the plant is one to which cultivators should direct their attention. Although figured so long ago in the "Gartenflora," it does not appear to have reached this country. It is a native of Georgia and the northern provinces of Persia.

23. Meyer's Iris (I. acutiloba).—A distinct species, from the same region as the last, and not yet in this country, although in cultivation in Russia. The flowers are similar to those of I. paradoxa, but the falls, although much smaller than the standards, are 1 in. or more in length and sharp-pointed. They are veined with purplish-black on a light ground, and the standards are lilac.

§ 3. Hexapogon.

Standards and falls both bearded down their claws. Neither of the two species forming this section are in cultivation.

24. Slender-leaved Iris (I. filifolia, *Bunge*).—A Siberian species not yet in cultivation. It has unbranched scapes of rather small pale blue flowers, rising from 2 in. to 4 in. high, and the very slender leaves, which are only about the twentieth of an inch wide, considerably overtop the spathes.

25. Sickle-leaved Iris (I. falcifolia, *Bunge*).—A pale blue-flowered species from the same country as the last. The scape in the dried specimens is about 6 in. high, and the curved leaves about 4 in. high.

§ 4. Evansia.

Falls furnished with a petaloid crest down the throat and claw; both falls and standards beardless.

26. Crested Iris (I. cristata, Bot. Mag., t. 412; I. odorata, *Pers.*).—Almost or quite stemless, with linear leaves 6 in. to 8 in. long; flowers small, deep pale lilac; crests yellow. A native of the hills of Kentucky, Virginia, and Carolina, and not uncommon in gardens. It is reported to have been introduced in 1756, and there are specimens in the Banksian Herbarium from the garden of Collinson dried in 1766.

27. Lake Iris (I. lacustris).—A native of the gravelly shores of Lakes Huron and Michigan, flowering in May. It is very closely allied to the last, but dwarfer, with a smaller flower, and especially with a shorter flower-tube. There is no figure of it, and it does not appear to be in cultivation in this country.

28. Japanese Slender Iris (I. gracilipes).—A native of Japan, where it was discovered by Mr. J. Small, of the United States Pacific Exploring Expedition in 1853-56. I am not aware that it has been introduced, and the plant Mr. Baker has seen in gardens under this name is totally different. It has a slender, weak stem, about 1 ft. high, lilac flowers, and a spathe of a single bract.

29. Hong Kong Iris (I. speculatrix).—Stem less than 1 ft. high; leaves linear, twice the length of the stem; flowers small, lilac spotted with violet and white in the throat; crests yellow with purple spots. Recently discovered in the island of Hong Kong by a Chinese workman of the Botanic Garden. It is an interesting discovery, as it materially extends the geographical range of the genus. Should it be introduced it will require greenhouse treatment.

30. Himalayan Iris (I. nepalensis, Sweet's "Flower Garden," series ii., t. 11, not of Wallich, as figured in Bot. Reg., t. 818; I. decora and sulcata, of Wallich).—A dwarf species, with lilac-blue flowers of medium size crested with yellow. A native of the Himalayan Mountains, from Simla to Assam, at an elevation of 6000 ft. to 8000 ft. It was cultivated in English gardens some fifty years ago, but seems to have been lost. The plant figured in Bot. Reg. belongs to germanica.

31. Fringed Iris (I. japonica, *Thunb.*; I. squalens of Thunb., not of Linnæus; I. chinensis, Bot. Mag., t. 373; I. fimbriata, Hort. Cels., *Ventenat*).—This species is better known under the latter name, and it has long been a favourite greenhouse plant in this country. It is a very pretty species, and more chaste and elegant in the colouring and form of the flowers than most of the Irids. The falls are oblong, ½ in. broad, crimped and fringed at the edge, spotted with yellow and white in the centre, and furnished with a large-fringed crest, reaching two-thirds of the way up; standards lilac, rather narrower than the falls. A native of Japan and China, where it inhabits woods and moist, shady places, flowering in April and May. It was introduced into this country towards the end of the last century, and has maintained its position up to the present time.

32. Bull's Iris (I. tectorum, Bot. Mag., t. 6118).—An exceedingly ornamental species, recently sent by Dr. Hance to Mr. Bull, of Chelsea. It is of dwarf, compact habit, having broad, pale green leaves, and moderately large, elegantly-coloured flowers. Falls above 1 in. broad, crimped at the edge, marked with deep lilac veins on a paler lilac ground, furnished with a deeply-laciniated white and lilac crest; standards rather shorter than the falls, plain lilac. A native of Japan, which has flowered well in the open border at Kew this season.

§ 5. Apogon.

Falls and standards both quite destitute of beard and crest.

33. Dwarf Russian Iris (I. humilis).—A stemless species, with linear leaves, and bright lilac flowers of medium size, with a long, slender tube. A native of Southern Russia not in cultivation.

34. Dean Herbert's Iris (I. cretensis).—Another dwarf species, with lilac flowers, larger than those of the preceding, the limb being nearly 2 in. deep, and the falls ¾ in. broad. Mr. Elwes brought living plants of this species from Asia Minor two years ago. Dean Herbert was the first to distinguish this as a species, though he never published it. It is also a native of Crete and Greece.

35. Christmas Iris (I. unguicularis, *Poir.*; I. stylosa, Bot. Mag., t. 5773).—A stemless species with bright lilac flowers, having a limb 3 in. deep; falls keeled with yellow and streaked with lilac on a white ground at the throat: standards uniformly lilac. A native

of Algeria, flowering in winter. Its flowers are among the largest of the genus, with a slender tube nearly 6 in. in length. They are fragrant, and are said by Dr. Moore to be produced at Glasnevin from Christmas all through January.

36. I. ventricosa (*Pallas*), from Eastern Siberia;

37. I. tenuifolia (*Pallas*);

38. I. songarica (*Schrenk*), from Central Asia; and

39. I. macrosiphon, from California, are allied species not known in cultivation.

40. **Dryander's Iris** (I. ruthenica, Bot. Mag., t. 1123 and 1393).—A very dwarf species, with narrow, finely-striated leaves considerably overtopping the lilac-purple flowers. It is a native of Siberia from the Ural to Davuria, and very hardy, flowering with us in May. Introduced in 1804.

41. **Menzies' Iris** (I. Douglasiana, Bot. Mag. t. 6083).—Though named after Douglas, it appears to have been first discovered by Menzies. A native of California, first imported alive by Messrs. Veitch in 1873. It is a pretty species growing about 1 ft. high, when vigorous, and bearing clusters of bright, lilac-purple flowers.

42. **Tolmie's Iris** (I. Tolmieana).—A native of Oregon, Northern California, and Nevada territory up to an altitude of 6000 ft. in the Rocky Mountains. It is not in cultivation. The stem is from 1 ft. to 2 ft. high, terminated by a single cluster of rather large, pale blue flowers. Mr. Baker thinks I. missouriensis may be a variety of this, and if so, it sometimes has yellow flowers. Described as growing in all low, moist situations among the mountains.

43. **Three-petalled Iris** (I. tripetala, Walter's "Flora of Carolina;" I. tridentata, Sweet's "Flower Garden," t. 274, not of Pursh).—A native of the Southern United States, in Pine swamps, from North Carolina to Florida. It is the only species with linear leaves and minute standards, which in this species do not exceed ½ in. in length. Flowers purple, with a yellow streak on each side of the falls near the throat. Introduced about the year 1820, but apparently since lost.

44. **Douglas' Iris** (I. tenax, Bot. Reg., t. 1218, Bot. Mag., t. 3343).—This and the following five species differ by having narrow leaves, and the flower-tubes funnel-shaped, not cylindrical, as in the species of the beardless section. It grows from 6 in. to 12 in. high, the stem terminating in a solitary bright lilac-purple flower. Leaves finely ribbed. A native of North America, from Fort Vancouver, Oregon, and British Columbia in the West, to Newfoundland and New Brunswick in the East, flowering in May and June. The specific name is derived from the tenacity of the fibre of the leaves, which is used by the Indians for various purposes. It was discovered by Douglas, and introduced into this country, but it is still rare.

45. **Hartweg's Iris** (Iris Hartwegi).—A native of California, gathered by Hartweg on the mountains of Sacramento in 1848. Very near tenax, but the flowers are much smaller and yellow, and the spathe bears more than one flower. Not in cultivation.

46. **Angular-fruited Iris** (I. prismatica, Bot. Mag., t. 1504, *Pursh*).—A slender-growing species, from 1½ ft. to 2 ft. high; stem bearing two green leaves between the base and the flowers, which are solitary, or two together, and of a rich lilac-blue. A very distinct plant, rare in gardens, but well figured in the Bot. Mag. It inhabits the Eastern States of North America. It is a good deal like sibirica, but the deeply-angled seed-vessels, exserted pedicels, and small spathe, readily distinguish it.

47. **Thunberg's Iris** (I. ensata).—This plant has a wide geographical area, extending from the Caucasus to Japan and North China, and occurring also in the mountains of North India; it also has a great many synonyms. Among others I. biglumis figured in Sweet's "Flower Garden," series ii., t. 187; I. Pallasi, Bot. Mag., t. 2331; I. fragrans in Bot. Reg., vol. xxvi., t. 1; and I. longispatha in Bot. Mag., t. 2528. A dwarf, stout plant, usually less than 1 ft. high, bearing one to three rather small lilac-purple flowers in a terminal cluster; falls marked with yellow and veined at the throat, standards erect lilac. Introduced early in the present century, but rare in gardens at the present time.

48. **Grass-leaved Iris** (I. graminea, Bot. Mag., t. 681).—A very distinct and common species, remarkable in its long, flexible, slender leaves, Grass-like in texture, which are usually nearly twice as long as the flower-stem. By this character and its short, angular stem it is easily distinguished from allied species. Flowers lilac-purple, of medium size; falls with an orbicular limb ½ in. broad, much shorter than the broad claw, which is dull yellow, the throat veined with blue-purple on a white ground; standards erect, uniformly purple. Spread all through Central and Southern Europe, from Belgium and France to Turkey, Greece, and the Caucasus. This species was cultivated by Gerard and other early gardeners. I. sylvestris of Balbis is a robust variety with broader leaves than the type, in which they scarcely exceed ¼ in.

49. **Common Siberian Iris** (I. sibirica, Bot. Mag., t. 60; I. pratensis, *Lamarck*; I. maritima, *Miller*).—This species grows in the same regions as the last, and also extends to Siberia. It has taller stems, sometimes 2½ ft. high, and always overtopping the leaves. The flowers of the typical form are of a deep bright lilac-blue, the falls veined with violet on a light ground. I. acuta is a dwarf, compact variety with leaves as long as the stem; and I. flexuosa (Bot. Mag., t. 1163) is a variety with white flowers, the parts of which are a good deal crisped. It was known to Parkinson and other old writers. I. sibirica var. sanguinea (Bot. Mag., t. 1604), I. nertchinskiana (Loddiges' Bot. Cab., t. 1843), I. hæmatophylla (Sweet's "Flower Garden," t. 118), are, perhaps, distinct species. They differ from the type by the redness of their young leaves, shorter peduncles, more tender leaves and spathes, and more fugitive flowers. They are natives of Japan and the east of Siberia.

This concludes the beardless set with linear leaves, the remainder of which have ensiform, that is, sword-shaped, leaves.

50. **Spotted Iris** (I. maculata).—This is the only dwarf species of this group with ensiform leaves, the whole plant growing only about 9 in. high. The broad falls are marked with a conspicuous blue spot or patch. A native of Mesopotamia, known only in the dried state in this country.

51. **Canadian Iris** (I. tridentata, *Pursh*; I. tripetala, Bot. Mag., t. 2885, not of Walters).—This rare species is a native of Canada, and approaches the more familiar I. versicolor, of which Mr. Baker thinks it may be a variety, but it is easily distinguished from that by its small standards; it is also near the next species. The falls of the flower are lilac-purple in the spreading portion, with a white lilac-veined claw.

52. **Bristly Iris** (I. setosa, Bot. Mag., t. 2326, under the name of brachycuspis).—A stout plant 2 ft. to 3 ft. high, with bright green leaves, thin in texture, and less than 1 in. broad. The flowers are bright lilac, and over the medium size. Native of Eastern Siberia, Kamschatka, and Japan, introduced many years ago, but still rare in gardens. It is nearest I. sibirica, but differs in its more fugitive flowers, broader leaves, and very small standards.

53. **Common Yellow Flag** (I. Pseud-acorus).—This common British species is the last of this group, with relatively very small standards. This plant is too familiar to need description. Its half-aquatic nature suggests the situations in which it will be found useful.

The next five species of beardless Irises are characterised by having a short flower-tube and seed-vessel narrowed gradually into a persistent beak, and furnished with six permanent ribs, associated with ensiform leaves. They all flower in summer.

54. **False Iris** (I. spuria, Bot. Mag., t. 58).—A common Central European and Mediterranean species, with flower-stems 1 ft. to 2 ft. high, bearing about three clusters of sessile, lilac flowers, the falls of which are traversed by a yellow keel. Mr. Baker regards the following as varieties of the False Iris:—I. dænensis, stouter than the type, with livid grey-lilac flowers with limb 2 in. long; the falls white with blue veins, bright yellow at the throat, veined and spotted at the borders of the throat with red. From the mountains of South Persia, and not in our gardens. I. desertorum, Bot. Mag., t. 1514; limb of flower, 2 in. long, the parts pale lilac with bright yellow claws, and the stands with a bright yellow border. I. notha, *Bieb.*; I. spuria var. major (Bot. Mag., under t. 1131), more robust than the type, with stems 3 ft. high; flowers very large, deep lilac.

55. **Gueldenstædt's Iris** (I. Gueldenstædtiana).—A common species in English gardens. It has white and yellow flowers, the falls with an orange throat and purple-veined, yellow-keeled claws; standards pure white bordered with yellow. A very hardy plant, inhabiting Asia Minor and extending through Central Asia to the borders of China.

56. **Large Yellow and White Iris** (I. ochroleuca, Bot. Mag., t. 61; Miller's "Icones," t. 154; I. gigantea, *Carrière*).—Another species which has long been an inmate of English gardens, but it is now by no means so common as it should be. It has very large white and yellow flowers, 3½ in. in depth. The falls are pure white at the edge, orange-yellow at the base and through the centre. The native country of this species is not known with certainty. Carrière's I. gigantea is a very large-flowered variety.

57. **Golden Iris** (I. aurea, Bot. Reg., xxxiii., t. 59, *Lindley*).—A very handsome species, with large bright yellow flowers, with

crisped falls. It is a native of the Western Himalayas, and Mr. Max Leichtlin has living plants of it in Germany.

58. Monnier's Iris (I. Monnieri, Redouté's "Liliaceæ," t. 236).—A fine, tall species, 3 ft. to 4 ft. high, with very large lemon-yellow flowers. It flowers the latest of all the Irises about London—at the latter part of June and beginning of July.

The remaining eight species of beardless Irises with ensiform leaves have relatively very large standards, and the seed-vessel is not narrowed into a peak.

59. Gladwin or Stinking Iris (I. fœtidissima).—This not very ornamental species is a native of the south of England and Central and Southern Europe, and the Mediterranean region, from the Canary Islands to Affghanistan. The flowers vary in colour from lilac-purple to a dirty white. Mr. Sutherland says it is one of the best for naturalizing in woods. Reichenbach figures a variety with white flowers veined with brown.

60. Various-coloured Iris (I. versicolor, Bot. Mag., t. 21).—This is a favourite species with gardeners, and has been from Philip Miller's time; he described it as Iris picta. It is a native of British North America, and very hardy with us. The stem rises from 1 ft. to 2 ft. high, bearing two or three stalked clusters of flowers, in which claret-purple, yellow, and white are variously combined in the different varieties, the standards being of an uniform claret colour.

61. Virginian Iris (I. virginica, Bot. Mag., t. 703).—A native of the Northern United States and British Possessions, and a very attractive species, about 2 ft. high, with simple and branched flower-stems, and violet-purple flowers, the falls veined with a darker hue and yellow at the throat, and the tips of the stigmas blue. It resembles sibirica in the colour and markings of its flowers, but may be recognised at a glance by its broader leaves and stouter flower-stems. It is frequent in this country at the present time, and was cultivated by Philip Miller in 1758. A summer-flowering species.

62. Hexagonal-fruited Iris (I. hexagona, Walter's "Flora of Carolina").—A robust species with long, broad leaves, and flower-stems 3 ft. to 4 ft. high, and large pale or deep lilac flowers. A native of the Southern United States from Kentucky to Texas and Florida, which has never been figured nor introduced to British gardens, though superior to many of its congeners from the same region. It is allied to the two last, but is much more robust, with a different scape and seed-vessel, and very much larger flowers.

63. Long-petaled Iris (I. longipetala, Bot. Mag., t. 5298).—This is an exceedingly beautiful free-flowering Iris of from 2 to 3 ft. high, with clustered, stalked flowers about 6 in. across. The narrow standards are violet or lilac-purple, and the long falls are elegantly streaked with broad, radiating bands of lilac and white, yellow, and spotted with red along the lower half of the centre. It first flowered in this country in the Horticultural Society's Garden at Chiswick in 1861, and is now cultivated in some of the nurseries. A native of California.

64. Siebold's Japanese Iris (I. lævigata, Bot. Mag. t. 6132; I. Kæmpferi, "Flore des Serres," t. 2073 and 2074).—Another of the gems of the genus, a favourite plant in Japanese gardens, now represented by many beautifully-coloured varieties in our gardens, where it is more familiar under the name of Kæmpferi than its proper appellation. It grows from 1½ ft. to 2 ft. high, and is remarkable in its relatively small standards, and very large, often uni-coloured falls. The variety figured in the Bot. Mag. has flowers of a deep red or plum-purple with three short, yellow bands running into the throat of the falls. In the "Flore des Serres," in the place quoted above, there are figures of four handsome varieties, namely, Alexandre von Humboldt, white with yellow throat; Professor de Vriese, rose beautifully suffused with violet; Alexandre von Siebold, purple passing into blue at the throat, where there is a yellow blotch; and Souvenir, delicate pink with veinings, and a glow of a deeper hue near the centre; throat yellow. Many other handsome varieties are familiar to lovers of this fine family. It is a native of Eastern Siberia and Japan, and was first introduced into this country from Japanese gardens by Von Siebold. With this species Mr. Baker unites Klatt's I. violacea, which is said to be a native of the Caucasus. In richness and depth of colouring the varieties of Siebold's Iris are unequalled by those of any other species of the genus; but, sad to relate, they have scarcely attained their full beauty before they begin to melt away and quickly shrivel up together.

65. Afternoon Iris (I. dichotoma, Bot. Reg., t. 246; Sweet's "Flower Garden," t. 96).—A very distinct, small-flowered species, resembling somewhat the old Pardanthus chinensis. It grows from 2 ft. to 3 ft. high, and has broad, short leaves in distichous clusters. The flower-stem is very slender and deeply forked; flowers among the smallest of the genus; falls lilac, white, spotted with purple at the base. A peculiarity of the flowers of this species is that they do not expand until after mid-day, and spirally twist up the same day before dusk never to open again. A native of Davuria and China, stated to have been introduced into this country by Mr. John Bell in 1784, but the writer of the description in the Bot. Reg. (in 1817) was of opinion that the plant from which the drawing was taken was the only one existing in the country at that date. This was raised from seed received from the Berlin Botanic Garden, under the name of Iris pomeridiana, by Messrs. Whitley & Co., of the Fulham Nursery. It requires a well-drained, light soil, and warm situation.

66. Tawny Iris (I. fulva, Bot. Mag., t. 1496).—This is another very easily recognised species, differing from all the true Irises in the segments of the flower being nearly uniform in size, and all uniformly spreading or turned back when the flower is expanded, therefore not distinguishable as standards and falls. The flowers are of tawny or copper colour, obscurely veined with purple. A native of the United States, introduced into this country in 1811 by a Mr. Lyon, a very intelligent and industrious collector of American plants. Mr. Baker states that it is still very rare in cultivation.

§ 6. POGONIRIS.

Falls with a distinct hairy line, hereinafter called the beard, down the claw; standards beardless; root-stock a rhizome.

67. Common Dwarf Iris (I. pumila, Bot. Mag. t. 9, and t. 1261).—This is a native of Central and South-eastern Europe and Asia Minor, and was one of the first commonly cultivated. The whole plant when in flower is rarely more than 4 in. or 5 in. high, the flowers rising clear of the leaves. In colour the flowers present considerable variation. Parkinson, in his "Paradisus" (date 1656), enumerates six varieties:—A white-blossomed, a straw colour, a pale blue, a blush, a yellow variable, and a blue variable-blossomed variety. Mr. Baker enumerates several wild varieties, among them—I. attica (Regel's Gartenflora," t. 377, f. 2); in this the flowers are yellow, the divisions feather-veined, with brown-lilac on the claws. I. clusiana (tristis) of Reichenbach's "Flora Germanica," has lilac-purple falls and yellow standards. I. violacea, Bot. Mag., t. 1261, has lilac-purple falls and standards, the former streaked with a darker hue, and furnished with a yellow beard.

68. Fragrant Iris (I. suaveolens, "Diagnoses," xiii., p. 15, *Boissier*).—A native of the plains of Bulgaria, gathered by Mr. Boissier, who had it under cultivation at Geneva. Flowers greenish yellow, very fragrant, tube one-third longer than the limb, which is not more than half as large as those of I. pumila, the falls with a central blotch of deep violet-blue, the beard yellow, the standards rather broader and crisped at the edge.

69. Sicilian Iris (I. pseudo-pumila).—An allied species with variously-coloured flowers not in cultivation in this country.

70. American Spring-flowering Iris (I. verna, Sweet's "Flower Garden," t. 68).—This is one of the most beautiful of the vernal Irises of the pumila group, and the only one of that group native of America. The standards and falls are of an uniform bright blue, the latter with an orange beard speckled with black. The one-flowered scape in the plant figured is about 4 in. high, and the leaves about three times as long, and nearly ½ in. broad. Mr. Baker informs me that this plant must now be very rare in gardens, for among all the numerous specimens sent to him under this name not one was the true plant. Mr. Colville received plants of it in 1837, and succeeded in flowering it the following year.

71. Tiger Iris (I. tigridia, Ledebour's "Icones," t. 342, *Bunge*).—A native of the mountains of Altai and Davuria. The leaves are crowded in dense tufts, and rise as high or slightly overtop the flowers; the latter resemble those of a small variety of pumila with a tube less than half as long. The variety figured by Ledebour has bright lilac flowers.

72. Ground Iris (I. chamæiris).—A dwarf species, similar to pumila, with which it has frequently been confused by botanists, but they grow in different countries, and the flowers of the present species have a much shorter tube. It flowers in London gardens at the latter end of April, and it is nearer lutescens than pumila, but it flowers earlier, and the stem and leaves are much shorter. Mr. Baker regards I. italica, Parlatóre, olbiensis, Henon, and balkana of Janka, as varieties. I. olbiensis is figured in the Bot. Mag., t. 6110. It is a fine variety, with showy, dark purple flowers, about 3 in. deep.

73. Thomson's Iris (I. kumaonensis).—A North Indian species, discovered by Dr. T. Thomson in Western Thibet, at an altitude of 12,000 ft. It is a small plant of the pumila group, having blue flowers. Not yet introduced into European gardens.

74. Hungarian Sand Iris (I. arenaria, Bot. Reg., t. 549).—An elegant miniature species, less than 6 in. high, having narrow leaves less than ¼ in. wide, about equalling the two-flowered leafy scapes in height. It differs from pumila in being smaller in all its parts, and in having a primary flower, the first of which miscarries, while that of the secondary flower comes to perfection. In this character, Edwards says in the "Botanical Register" under the plate quoted above, that it differs from all other species. I. flavissima is very closely allied to this, but it flowers later in the year, and it grows in wet places, whereas the present affects dry sandy places. The Sand Iris was in cultivation in the Physic Gardens at Chelsea in 1820. This species has a remarkably slender rhizome, and in a wild state the whole plant is frequently no more than 2 in. high.

75. Naked-stemmed Iris (I. nudicaulis, *Lamarck;* I. biflora, Sweet's "Flower Garden," series ii., t. 152, not of Linnæus).—Judging from the figure quoted above this has dull violet-purple flowers, the falls furnished with a yellow and blue beard and veined with blue. It is dwarfer and stouter than the last, and the several-flowered scapes are leafless. Sweet's figure was drawn from a plant in the Apothecaries' Garden at Chelsea, in 1838. Mr. Baker refers this to I. biflora.

76. Two-flowered Iris (I. biflora, *Linnæus;* I. hungarica, Sweet's "Flower Garden," series i., t. 74).—A showy species, with purple-blue flowers about 3½ in. across, in which the standards are much broader than the falls, and the beard on the latter is white tipped with black. A hardy, stout-growing plant, usually less than 1 ft. high; flower-scape forked, as in I. furcata; leaves about ¾ in. broad, and conspicuously curved. In a rich, light soil, it flowers in May and June, and sometimes again in the autumn. A native of Hungary, cultivated in this country by Messrs. Colville about the year 1820.

77. Elder-scented Iris (I. sambucina, Bot. Mag., t. 187).—One of the most familiar and distinct species of the large-growing kind. As Parkinson describes the flowers the standards are of a smoky purplish colour or dirty pink and white tinged with yellow towards the base, whilst the falls are purple with darker veins, and the short beard is yellow. The large bracts or spathes of this species are scarious and membranous on the margin, and tinged with pink and white. A native of South-eastern Europe; in cultivation in this country upwards of two centuries ago. It grows 2 ft. to 3 ft. high, and the broad leaves are distinctly striated. On account of its strikingly distinct character, if not for its beauty, this species should find a place in collections.

78. Squalid Iris (I. squalens, Bot. Mag., t. 787).—The name of this plant would really be more appropriately given to I. sambucina than to this form, which, taking the Bot. Mag. figure as typical, has brighter-coloured, handsomer flowers. But these two can only be regarded as varieties of the same species, differing mainly in the colouring of the flowers. The standards in this are smaller, and of a less dirty appearance, the upper part being purplish-red and the lower yellow, and the falls are of a deeper violet-purple, with a purple-tipped beard. The plant figured in the Bot. Mag. (1805) grew in the nursery of Messrs. Grimwood and Wykes in 1803.

79. Dingy Iris (I. lurida, Bot. Mag., t. 669 and 986).—This, again, is very near I. sambucina, exhibiting the same general characters, but having much brighter-coloured flowers, in which the yellow element is more conspicuous, and the purple is of a richer hue. Philip Miller cultivated this in 1758. Wild specimens appear not to be known, and it may be of garden origin.

80. Variegated Iris (I. variegata, Bot. Mag., t. 16).—A native of Eastern-central Europe, perfectly hardy in this country, and one of the most ornamental and distinct of the wild forms of the genus. The specific name refers to the variegated colouring of the falls of the flower, not to the foliage. It has been in cultivation in this country nearly three centuries, and it is the yellow variable Flower-de-Luce of Parkinson's "Paradisus." The whole plant is about 1 ft. high, or sometimes rather more, and the ensiform leaves are distinctly ribbed. The standards of the flower are about 2 in. deep, of a bright yellow, faintly dotted with red near the base, and the falls are yellow, with purple-red veins, and almost wholly purple-red at the tip. With us it flowers in May or June.

81. Hybrid Iris (I. hybrida; I. amœna, Sweet's "Flower Garden," series 2, t. 165).—A charming species, 12 in. to 18 in. high, with broad, glaucous, curved leaves, and white and violet-purple flowers of medium size. The standards are broad, pure white, passing into yellow at the base; the broadly obovate falls are of a rich violet-purple at the tip, and striped with white in the lower part. A garden variety of Dutch origin, and one of the most distinct of the genus.

82. Common German Iris (I. germanica, Bot. Mag., t. 670; I. nepalensis, Bot. Reg. t. 818, and many other synonyms).—The common variety of this species has large blue flowers and broad leaves, and is familiar to almost everybody. It is one of the few plants that approaches perfection in some of the dingy gardens and squares in London. I. nepalensis, of the Bot. Reg., is an exceedingly handsome variety, cultivated in India, and sent to this country by Wallich some fifty years ago under the above name. The flower is nearly 5 in. deep, from the summit of the standards to the lower part of the falls. The former are of a rich, dark violet-purple, and wavy on the margin, and the falls, which are 2 in. broad in their broadest part, are of an intense violet, elegantly striped with white and purple at the base, and tinged with yellow and red. Beard white with yellow tips, and just above this, on the petaloid stigma, there is a blotch of indigo-blue. Altogether this may be described as one of the most effective among the old varieties of I. germanica. The garden varieties of this are referred to in the introductory part. This species is a native of Central Europe.

83. Florentine Iris (I. florentina, Bot. Mag., t. 671; I. alba, *Savi*).—The grand, white-flowered Iris, sometimes seen in gardens, is the typical variety of this species, but blue-flowered varieties occur, or rather, according to Mr. Baker, this name should be restricted to the white-flowered variety, the blue ones belonging to I. germanica. There are no botanical characters, indeed, to separate the Florentine from the German Iris; but colour, from our point of view, is of the first importance. In the Florentine Iris the flowers, which are nearly or quite 6 in. deep, are nearly pure white or faintly tinged with blue; and the falls are yellow veined with red and green at the base, and the beard is large and of an orange-yellow colour. The large bracts or spathes are brown, and the broad leaves of a rich, dark green. This fine Iris was cultivated by Gerarde in 1596, and is one of those described in his "Herbal." It is a native of the south of Europe.

84. Hornemann's Iris (I. neglecta, Bot. Mag., t. 2435).—One of the commonest forms in cultivation, the native country of which is unknown. It is a tall-growing species of the germanica type with relatively small flowers, measuring about 2½ in. across. The standards are of a pale blue with darker shading, and the long, narrow, very much reflexed falls are notched at the tip, of a deep, purple-blue veined with purplish-red, and furnished with a yellow crest or beard. I. amœna (Redouté's "Liliaceæ," t. 336) comes very near this, but the standards are larger, and almost pure white, contrasting well with the purple falls. Hornemann's Iris was cultivated early in the present century, the Bot. Mag. figure having appeared in 1823.

85. Ledebour's Iris (I. glaucescens, Ledebour's "Icones," t. 102).—A dwarf species, less than 1 ft. high, the unbranched flower-stem slightly exceeding the leaves. Flowers small, of an almost uniform pale blue, the beard on upper side of the petals slightly tinged with yellow; standards and falls nearly equal in size. The spathe bracts are also tinged with blue. A native of Central Siberia; not in cultivation, so far as I know.

86. Barbey's Iris (I. rubro-marginata, Gard. Chron., vol. iii., new series, p. 524, *Baker*).—The most striking feature of this species is the distinct red edge of its leaves and spathe valves. It is a dwarf, stemless species, the whole plant when in flower being not more than 4 in. high; leaves 2 in. to 3 in. long at the flowering time, and ½ in. broad; flowers two to a root, one expanding after the other, seated directly on the crown of the root-stock, of a deep uniform lurid purple, including the beards on the falls. A native of Anatolia, where it was discovered by Mr. Barbey, son-in-law of the distinguished botanist Boissier, who sent living plants of it to Mr. Max Leichtlin, of Carlsruhe, who succeeded in flowering it, and from whom Mr. Baker received the materials for his description. I am not aware that living plants of this Iris exist in this country.

87. Pale Yellow Iris (I. lutescens, Bot. Mag., t. 2861).—This is a species of medium dimensions, and quite third-rate as an ornamental plant. The flowers are pale yellow, streaked with a dull reddish-brown. A native of the South of Europe, in cultivation in this country upwards of fifty years ago, and, according to Sweet, introduced in 1748.

88. Swiss Iris (I. virescens, Redouté's "Liliaceæ," t. 295).—A somewhat unattractive, though singular species, with greenish-white flowers below the medium size. The plant grows about 1 ft. high, and is a native of Switzerland. It was introduced into this country in 1824.

89. Bloudov's Iris (I. Bloudovi, Ledebour's "Icones," t. 101).—A Siberian species of slender ornamental merits.

I. goniocarpa from the Himalayan Mountains, and I. Haagei from Syria, are allied Bakerian species at present unpublished.

90. Korolkow's Iris (I. Korolkowi, Regel's "Gartenflora," t. 766).—A very distinct and beautiful Iris, discovered in Turkestan by Mr. Korolkow, who sent living plants of it to St. Petersburg, where it flowered in a greenhouse in the Botanic Gardens. It is also, according to Dr. Regel, hardy in the open ground in the same country, and, therefore, it may be regarded as hardy in this country, in light soils, at least. But it is always necessary to remember that, although the climate of St. Petersburgh, for instance, and many other places, is much more severe than in the coldest parts of the British Islands, herbaceous plants there invariably enjoy the benefit of the protection afforded by a thick layer of snow, which often enables comparatively tender plants to withstand, without injury, the most rigorous winters. It grows from 15 in. to 18 in. high, and the medium rigid flowers are of a slightly reddish-brown, or almost fawn-coloured, the falls veined with purplish-red. The standards and falls are almost equal in size, and the spathes are green.

91. Leafless Iris (I. aphylla, *Linn.*)—This species has a large number of synonyms, among those cultivated may be mentioned the I. furcata of the "Botanical Magazine," t. 2361. The name refers not to the absence of leaves altogether, but to the leafless flower-scape. The "Botanical Magazine" plant has violet-purple flowers of medium size, the falls traversed by a white or pale blue beard. It grows about 1 ft. high, and has thick, stout, fleshy rhizomes. The name was given in reference to the usually forked scape. A native of the northern Caucasus, and a very pretty species. Fifty years ago it was in the Physic Garden at Chelsea, and also in Messrs. Colville's Nursery.

92. Pale Yellow Iris (I. flavescens, Sweet's "Flower Garden," series 2, t. 56).—A fine variety with pale yellow flowers, passing into white on the falls, which spread about 4 in. Standards nearly orbicular, and of a rather deeper tint; beard conspicuous, tinged with red. I. imbricata ("Botanical Register," 1845, t. 35) is scarcely different, and it sometimes bears the name of I. sordida in gardens. A native of the Caucasus, and has long been in cultivation.

93. Pale Purple Iris (I. pallida, Bot. Mag., t. 685; I. odoratissima, Hort. Schoenb., t. 9, *Jacq.*).—This is one of the largest-growing kinds. It has large, pale violet-purple flowers, with broad (about 2 in.) standards and falls, the latter furnished with a very prominent beard in the lower half. One of the first species in cultivation, and included in Gerarde's collection in 1596. Aiton ("Hortus Kewensis") calls it the Pale Turkey Iris, and Gawler, in the Bot. Mag. (1803) states that it was known in all the nurseries about town by the name of the Dalmatian Iris. It is not so hardy as most of the other large-flowered species.

94. Lamarck's Iris (I. plicata, *Lank.*; I. aphylla var. plicata, Bot. Mag., t. 870).—The colouring of this species is very singular. The spathes are of a whity-brown; the standards larger than the falls, wavy on the margin, dirty white streaked, and border with violet-purple; falls faintly streaked with purple and furnished with a large, yellow beard. This species or variety appears to be of garden origin, and comes very close to I. pallida. The Bot. Mag. figure appeared in 1805, and it is there described as a rare plant only seen in the collections of Mr. Loddiges at Hackney, and in that of Mr. Salisbury at the Botanic Gardens, Brompton. The flowers are said to smell like those of the Orange tree.

95. Swert's Iris (I. Swerti, Sweet's "Flower Garden," series 2, t. 254, *Lamarck*).—A very delicately coloured Iris, the native country of which is unknown; it is probably of garden origin. It also bears the names of I. desertorum and I. portugalensis. The leaves are of a glaucous hue, from 1 ft. to 18 in. high. Flowers about half the size of the ordinary variety of germanica, white, bordered with bright lilac-purple; falls yellow beneath, and furnished with yellow beards, striped with red in the lower half. Don says, in the work quoted above, that this elegant Iris had then (about 1836) been long cultivated in gardens; but of its origin and native country nothing certain was known.

Sub-genus III.—Dietes.

[South African and Australian species. Flower-tube none; all the segments broadly sickle-shaped and equally spreading, that is, not distinguishable into standards and falls. These are, strictly speaking, all greenhouse plants. They have been referred to Moræa by some writers.]

96. White Cape Iris (I. compressa, *Thunb.*; Moræa iridioides, Bot. Mag., t. 693).—A dwarf plant with evergreen ensiform leaves scarcely so long as the slender branching stem; flowers about 2½ in. in diameter, white, the three outer petals furnished with a yellow beard, and the small, bifid, petaloid stigmas lilac. A very elegant little plant, first discovered by Thunberg in the interior of the Cape country; cultivated by Miller in 1758. He received the seeds of it under the name of White Water Lily. Gawler says that it is of the easiest culture, and will grow many years together, without parting or removing, in the same pot; requires plenty of water; blooms several weeks in succession in the summer months. At that date (1804) it was one of the commonest of the Cape species in this country. Moræa vegeta of Miller's "Icones," t. 239, fig. 1, and Iris crassifolia of Loddiges' "Botanical Cabinet," t. 1861, are referred to this species by Mr. Baker, but although Miller's figure agrees very well with it, Loddiges' appears to be different, partly due, perhaps, to bad drawing.

97. Chain-dotted Iris (I. catenulata, Bot. Reg. (Moræa), t. 1074, *Baker*).—Nearly akin to the last, but the inner petals are smaller than the outer, which are furnished with a line of dots on each side nearly up to the middle, and a yellow, quadrangular blotch in the centre a little above the middle. The stigmas, too, are of deeper blue, and all the petals faintly tinged with the same colour. Lindley describes this as a stove plant from the Mauritius, but Mr. Baker says it is from Madagascar.

98. Argus Iris (I. bicolor, Bot. Mag., t. 1404, *Lindley*).—An exceedingly elegant and distinct species, with rich yellow flowers, the larger outer petals being furnished with a central, hemispherical, purple, brown, or crimson spot. The whole plant grows about 2 ft. high, and the slender stem is dichotomously branched and many-flowered. Treated as a half-hardy plant this blossoms freely in half-shady situations during the summer months. One of the gayest of the genus. A native of South Africa.

99. Wedding-flower Iris (Iris Robinsoniana, Gard. Chron., 1872, p. 393, with a woodcut, *F. Mueller*).—A gigantic species, attaining a height of 6 ft. or more, with proportionately large sword-shaped leaves, and large pure white flowers marked with golden-yellow on the outer petals. The flowers are about 4 in. in diameter, and very evanescent, but as they are numerous and quickly succeed each other, the plant retains its beauty for a long time. It is a native of Lord Howe's Island, off the eastern coast of Australia, where the residents call it the Wedding Flower. I am not aware that it has been introduced into this country.

Alphabetical List of the Irises described.

The species of Iris being so numerous, the following list will be found useful in finding any name required. It should be observed, however, that I have not included all the synonyms, but I have not intentionally omitted any of those figured in botanical and horticultural serials. The names in italics are synonyms:—

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Aucheri, 17
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Bloudovi, 89
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crassifolia, 96
cretensis, 34
cristata, 26
danensis, 54
decora, 30
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desertorum, 54
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diversifolia, 9
Douglasiana, 41
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fimbriata, 31
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fœtidissima, 59
Fontanesi, 4
fragrans, 47
fulva, 66
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goniocarpa, 89
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Gueldenstædtiana, 55
Haagei, 89
Hartwegi, 45
hexagona, 62
Histrio, 3
humilis, 33
hungarica, 76
hybrida, 81
iberica, 20
imbricata, 92
italica, 72
japonica, 31
juncea, 6
Kæmpferi, 64
Korolkowi, 90
Krelagei, 8
Kumaonensis, 73
lacustris, 27
lævigata, 64
longipetala, 63
longispatha, 47
lurida, 79
luteola, 87
macrosiphon, 39
maculata, 50
maritima, 49
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Monnieri, 58
neglecta, 84
nepalensis, 82
nepalensis, 30
nothu, 54
nudicaulis, 75
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odorata, 26
odoratissima, 93
olivensis, 72
palæstina, 13
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plicata, 94
portugalensis, 95
pratensis, 49
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pseudo-pumila, 69
Pseudo-acorus, 53
pumila, 67
reticulata, 8
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sulcata, 30
susiana, 19
Swerti, 95
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tigridia, 71
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Tolmieana, 42
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tripetala, 43
tuberosa, 18
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variabilis, 1
variegata, 80
ventricosa, 36
verna, 70
versicolor, 60
violacea, 64
virescens, 88
virginica, 61
Xiphion, 1
Xiphioides, 2

W. B. Hemsley.

COTTAGE GARDENING.

Peas.

In small gardens there is often as great an anxiety to have vegetables early in the season as in large ones; and as this, on the whole, is a laudable ambition, there is no reason why it should not be gratified. Where this desire is present, accompanied by the necessary perseverance, Peas for an early crop may be sown in autumn any time after the middle of November; and although this early sowing may not gain more than a week in point of early production over the crop sown in February, yet the gain of a week is a consideration eagerly sought after by some people. Sow on a warm, dry south border in drills 1½ in. deep and about 5 in. or 6 in. wide. As this crop will have numerous difficulties to encounter, sow rather thicker than would be desirable in spring. The rows may be either 3 ft. apart or at wider intervals, with other crops, such as Lettuce, Cabbage, &c., between. After the Peas are covered and the surface raked smooth, scatter just over the rows a few sifted coal-ashes sufficient to cover the surface to prevent the mice finding them. I have never known mice injure Peas so covered. The trouble is very slight, and the remedy is always available everywhere. It also prevents damp lodging round the stems when the Peas come through. There is no better variety for early sowing than William the First; it is hardy, vigorous, prolific, and early. Unique has been described as a very dwarf William the First, and is in every way adapted for sowing on narrow borders, as its height seldom exceeds 1 ft., and for a dwarf Pea it is very productive, with a good-sized pod. Amongst early white Peas, Carter's First Crop or Sutton's Ringleader is a very early variety. Dickson's First and Best, although a day or two later, is a very fine, prolific sort. There are so many varieties of Peas now to be had that one cannot do more than just mention a few of the most desirable kinds. As soon as the Peas are fairly above ground draw a small ridge of dry surface soil on each side of the rows; if the weather be wet and cold, it will be an advantage if the soil can be obtained from a dry, warm heap, or from a dry bank; little attentions of this kind will not be labour thrown away. In cold, frosty weather, the rows may be still further sheltered by evergreen branches, or branches of Oak or Beech with the dead leaves clinging to them, which should not be placed too close to the rows, or they may tend to weaken the growth, for cold piercing winds are usually more destructive to any tender growth than a few degrees of frost, and a few branches placed 6 in. or so away on the windward side will shelter without unduly weakening the plants. In alluding to this question somewhat fully my object is to show that too much shelter is as bad, or worse, in its effects than too little. Of course the sticks to which the Peas will have to cling for support must be applied in good time, and they in themselves will afford a good deal of shelter. Where early Peas are not so eagerly sought after, then the sowing may with advantage be delayed till February, or even March, if the weather prove unfavourable, as, in point of fact, there will not be much time gained between sowing a crop in February or one in March. If William the First, Huntingdonian, and Ne Plus Ultra be all sown at the same time, they will follow each other in succession better than any other sorts, and if a good crop be the first consideration rather than earliness, then the first sowing might take place about the end of February or beginning of March, and even then it becomes a question whether it is not better to rely upon second early and late kinds, and not plant early kinds at all, as they are certainly not so prolific or lasting; this is a matter upon which each must decide for himself. One of the very best Peas for a midseason or late crop, either for a small or large garden, is Culverwell's Prolific Marrow. It is of medium height, very prolific, and has the power (possessed by only a few varieties) of withstanding drought in a marked degree. It has also a perpetual bearing habit, which is probably due to its inherent vigour of constitution. In the way of new Peas, Carter's Commander-in-Chief is a fine variety amongst tall kinds, and Turner's Dr. Maclean amongst dwarf sorts, that no doubt will be sought after during the coming season. Where sticks are difficult to procure, Laxton's Marvel and Standard, from their dwarf, stiff, erect habit, will be desirable acquisitions for midseason work, and they are also prolific bearers, and have long, well-filled pods. I need hardly say that to grow Peas profitably, the land must be well and deeply worked, and in very dry, porous soil; sowing in trenches in which some rotten manure has been buried 18 in. or so, has been found of great benefit. The greater part of the soil should be returned to the trenches over the manure before the Peas are sown, so that the top of the soil is about 3 in. below the surface; this will allow plenty of space for flooding with water should watering be necessary. In the case of late, or, in fact, any of the Marrow Peas, plant them evenly over the drills from 1½ in. to 2 in. apart, according to kinds, thick planting being ruinous to Peas, or, indeed, to any other crop. When dry weather sets in mulch with manure, if it can be had, 18 in. or 2 ft. wide on each side of the rows; if manure cannot be had, then use the best substitute available. Fresh loose earth spread over the surface to the thickness of 2 in. or 3 in., will often produce a better result than meagre waterings. All late Peas should have the pods picked carefully, without pulling or breaking down the stems, and should always be gathered before they get too old for use, as unless this is attended to they exhaust the plants unnecessarily, and shorten the time of bearing. Peas should be sticked before the tendrils begin to form, so that they may have something to cling to, for if once allowed to lop over they never thrive so well after, even when placed again upright. There are various ways of arranging sticks to Peas, but the best way is to slope them at about an angle of 45°, and to let the sticks on each side slope the contrary way. The Peas are not so liable to be blown out, and there is a saving of sticks over the upright method of staking, while instead of allowing the tops to meet, as is generally the case, leave an interval of 4 in. or 5 in. between, to insure plenty of room for the Peas to grow inside the sticks. Where a succession of Peas must be kept up, the rule is to sow again as soon as the last sowing is well through the ground, making the last sowing of Marrow Peas about the second or third week in June, after which time in the majority of soils and situations, they will not, by their produce, pay for the seed. If snails or sparrows be troublesome in the spring, dust the Peas freely with soot early in the morning; this will not only render them distasteful, but will act as a manure, strengthening and invigorating the crops. The produce of all Peas, especially late varieties, is much superior if the rows can be isolated, with dwarfer crops of vegetables growing between them. When crowded together they cannot obtain that free circulation of air so essential to vigorous growth.

E. Hobday.

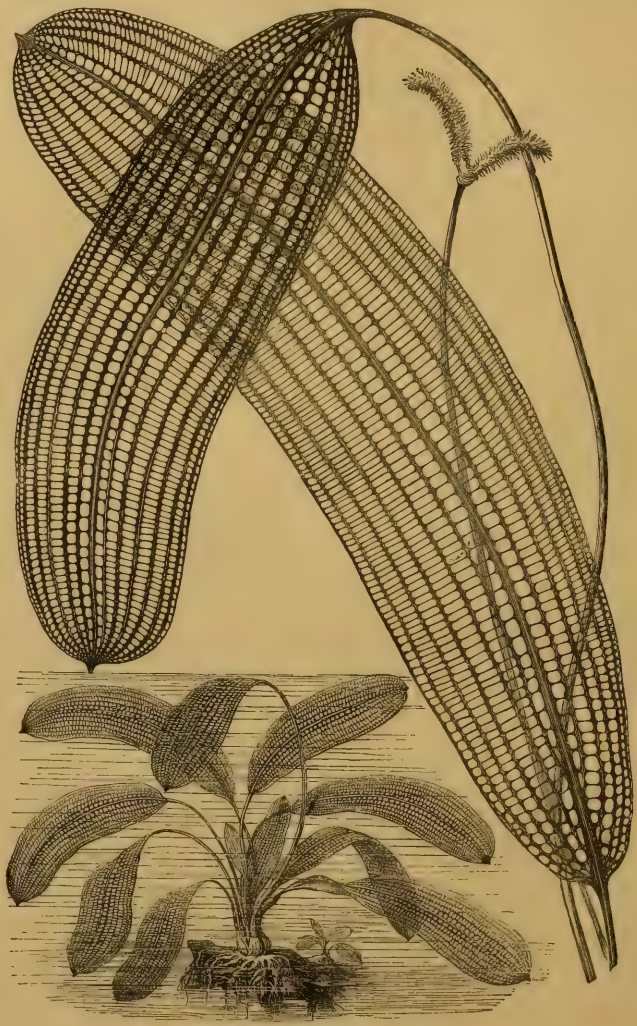
Planting Stove and Greenhouse Bulbs.—A very common question asked is, What is to be done with bulbs received from abroad? When a bulb has only lain dormant in the earth during its natural period, it is ready to spring into renewed life upon the application of warmth and moisture, and it matters little whether it is suddenly transferred from dryness to moisture, or whether the sudden change takes place gradually, because its powers of life are unimpaired. When rain begins to fall it soaks but slowly into the earth, and when it does reach the bulb it is still arrested in action by the numerous dry coats with which this body is invested, and through which it must gradually filter. But when a bulb has been long out of the earth its vital energies are much diminished, and it cannot bear even that slow supply of moisture—its food, which is furnished by wet soil, whose humidity penetrates its coats, and is absorbed by the living tissue. If a weakened bulb be suddenly brought in contact with water it will absorb it, but will be unable to digest it. Then the water will become stagnant and putrid and destroy the bulb. The rule, therefore, to observe in the case of newly-imported bulbs is to place them where they absorb moisture very slowly. The driest earth contains water, which can only be driven off by the application of intense heat. A bulb, therefore, should be planted in what is called dry soil, and placed in a shady part of a greenhouse until it has become plump and begun to shoot; if it has begun to shoot when received, still the same treatment should be observed, and the driest soil used to plant it in. It is only when signs of growth can be detected that a very little water should be given, while the temperature is at the same time slightly increased, and no considerable quantity of water should be administered until the leaves are an inch or two above the ground, and evidently disposed to grow rapidly. These remarks refer more particularly to Cape and other choice greenhouse bulbs.—"Gardeners' Record."

THE INDOOR GARDEN.

CULTURE OF THE LATTICE-LEAF PLANT.

(OUVIRANDRA FENESTRALIS).

This singularly interesting Madagascar aquatic at one period caused me considerable anxiety; three plants of it came into my possession, each of which had leaves about 3 in. in length; one had five leaves, one three, and the other two; they seemed tolerably healthy, but were covered with confervæ, and the crowns seemed hard. I cleaned them several times, but whilst they were in the soft water they quickly became covered again. They came under my care in January, and in May I tried one of them in the ordinary water supplied by a London company, and the result was less confervæ, but the plant made less progress than the two others. Two of the plants were placed in large flower pots stopped at the bottom, and the plants themselves were potted in peat and Sphagnum in 60-sized pots, and plunged up to their rims in clean gravel and shells; the other was in an inverted glass cloche, the bottom of which was filled with gravel and shells in a similar manner. Each plant was about 6 in. below the surface of the water in which it was placed—I dare hardly say grew. I kept the confervæ tolerably well in check by adding a little fresh water daily, but still the plants did not thrive. I should add that the house in which they were kept was our hottest stove. Early next year a house came into my possession in which there was a slate tank 3 ft. long, 2 ft. 6 in. deep, and 2 ft. wide. This was situated just over a hotwater pipe where it entered the house, and consequently it warmed the water in the tank. Into this tank, elevated about 1 ft. from the bottom, I placed the worst of the Ouvirandras. Water was daily taken from the tank for use in the house, and it was re-filled every morning with soft water which had stood in watering-cans in the house all night. Under such conditions it was not very long before the plant began to grow more strongly than it had previously done, and, encouraged by this, I placed the other two plants in the same tank. In order to accomplish this, I put a false bottom in the tank in the shape of a large square of glass, fixing it about 18 in. below the surface of the water, and before the end of the summer each plant had made a leaf or two at least 9 in. long, and my worst enemy, the confervæ, had disappeared. When, early in spring, the following year, the plants were potted, I tried one wholly in peat, and it grew away just as well as the others; in autumn I parted with one of the plants; the remaining two continued to make progress, and one of them produced an offset. In the course of the next year, the fourth from starting, I had three young plants formed at the base of the old plants; one of these was tried on a hillock of loam, and it progressed satisfactorily, and before six years were over I had one plant with leaves 15 in. long, one with six leaves over 1 foot long, and several with leaves from 6 in. to 8 in. long; and during that year and the next the plants grew and increased rapidly. The Ouvirandra may be propagated by means of division of the roots, which are very tenacious of life. Mr. Ellis, in his "Madagascar Revisited" tells us that it grows there "in places which are dry at certain seasons of the year, that the leaves then die down, but the root buried in the mud retains its vitality, and when the water returns fresh leaves burst forth. Whenever the earth around even the smallest portion of it remains moist, that portion puts forth leaves when again covered with water." The other species from Madagascar, O. Berneriana, requires deeper water than O. fenestralis. Its leaves are not so open, and are from 15 in. to 20 in. in



The Lattice-leaf Plant (Ouvirandra fenestralis).

length. It is, in short, altogether a coarser-growing plant than O. fenestralis. John Bester.

CULTURE OF PLUMBAGO ROSEA.

Though much has been written against the use of this plant for furnishing cut flowers, there can be but one opinion amongst those who know it well as to its general decorative properties at this season of the year—whether associated with fine-foliaged or with flowering plants—its light and graceful habit making it specially suitable for that purpose. We have some plants of it here in 32-sized pots raised from cuttings put in last spring, and each plant is now a mass of bright pinkish-salmon-coloured inflorescence, borne on five or six main stems which branch and ramify in all directions. These plants were potted in a mixture of loam and leaf-mould, to which was added a sprinkling of silver sand, and they were kept in the stove for a short time after they were potted. As the season advanced they were moved to the front shelf of a late Vinery, and after being there for a time they were again moved to a small span-roofed house, in which no fire-heat was used. Here they received all the light and air possible, and remained till cold weather set in, when they were removed to the top shelf in the stove, and at once commenced to throw up their flower-stems. The shoots were stopped several times during the summer. After they were taken out of the stove, they would have done equally well in an ordinary frame, provided they had been gradually hardened by exposure to the air. It is, of course, easy to grow much larger specimens if required, but I find these young plants much more handy and compact for general purposes than older plants cut back and grown on again in spring. I may add that if the old flower-spikes be left undisturbed after blooming, their points will continue to lengthen and produce a second crop of flowers early in spring; but, of course, these will not be so fine as on the first occasion. A little weak manure-water given occasionally will assist them. Thomas J. Crane.

Logshill, Chislehurst.

SELECT EPIDENDRUMS.

The genus Epidendrum is one of the most extensive belonging to the Orchid family, but, on account of many of the species and varieties being of interest only to botanists, but few are cultivated, and those which are grown are not as a rule favourites. Notwithstanding, however, that many of the Epidendrums bear insignificant flowers deficient in colour, a selection of several beautiful varieties may be made, which will be found to be showy, free-flowering, and of easy culture, while the fragrance of the flowers of many of the kinds that are not showy renders them well worthy of cultivation. Almost the whole of the Epidendrums are from tropical America and the West Indian Islands; they succeed best when grown in precisely the same manner as the Cattleyas and Lælias—*i.e.*, potted in well-drained pots in fibry peat and Sphagnum Moss, and placed in the intermediate-house. They are evergreen, and require a liberal supply of water at their roots during the growing season, and a restricted amount during the period of rest. A few of the most acceptable varieties are Epidendrum bicornutum, a lovely variety, which bears from six to twelve large, pure white, wax-like flowers spotted with mauve; its pseudo-bulbs are about 1 ft. in height, hollow, and horn-like; it thrives best when suspended close to the glass and kept wet all the year round. E. vitellinum has orange-scarlet blossoms, which last long in perfection. E. atropurpureum (syn. E. macrochilum) has brownish-crimson sepals and petals and a white lip blotched with purple at the base; of this there are several varieties, which vary much in colour. E. myrianthum bears large branching spikes densely furnished with pretty rosy-magenta flowers. E. aurantiacum (Cattleya-like in growth) has orange blossoms. The sepals and petals of E. nemorale are rose-coloured, and the lip white and red. E. syringæthyrsum, a fine, tall-growing variety, has light purple and white flowers. E. rhizophorum, a tall, slender-growing kind, has orange-scarlet flowers. The flowers of E. prismatocarpum are creamy-white spotted with black, and the lip is pink. E. Stamfordianum has greenish-yellow flowers spotted with brown; this variety makes a special flowering growth. E. crassifolium, a free-growing, tall variety, has rose-coloured flowers, that are found to be very useful for cutting. The blossoms of E. cinnabarinum, a similar-habited kind, are scarlet. E. dichromum, the flowers of which measure nearly 2 in. in diameter, has sepals and petals of a light rose colour, and a rosy-purple lip. E. ciliare latifolium is similar, as regards growth, to Cattleya Mossiæ, but more slender; its flowers are pure white; the sepals and petals are long and narrow, and the lip incised and fringed. E. fragrans has sepals and petals of a creamy-white colour, and a lip veined with deep crimson. These are all really useful kinds, from among which amateurs may select what they desire and be spared the trouble of testing mere botanical curiosities, the flowers of which, when they are produced, generally prove unsatisfactory. James O'Brien.

The Wheel-draught Plan of Setting Saddle-boilers.—I should be glad to know if any of your readers have tried this plan, and with what results? As most of us are aware, saddle-boilers are usually set so as to split the draught by a mid-feather at the back, bringing it on each side, and then along the top, where it meets again, and then passes into the chimney; but by the wheel-draught method the draught is not split on leaving the furnace, but passes out on one side of the boiler, and under the side-wing and over the front, above the furnace door, by a bridge, and then along under the other side-wing to the back again, where it turns and comes on one side of the roof and goes back on the other side of them into the chimney—two flues being formed on the roof of the boiler by a partition in the centre. By this plan the heat, after leaving the fuel chamber of a 6-ft. boiler, for example, traverses 24 ft. of its surface before it enters the chimney, whereas by the ordinary plan it only traverses half that distance, and the loss of heat must be in proportion. In my opinion the common winged-saddle can accomplish as much or more than any other form of boiler, but the setting of it is an important matter, and worth a little discussion.—J. S. W.

Pinks for Forcing.—When the Perpetual Carnations begin to fail a little in early spring, the early or forcing Pinks come in to take their place. There is now a valuable group of these—valuable, not so much in point of numbers as in their fine, distinct, and useful character. Among these may be mentioned Lee's coccinea, a fine bright scarlet, the self flowers of which are large and full, and produced in abundance; Derby Day (Clark), a large full flower, having a deep pink ground colour heavily laced with bright red, habit of growth free and strong; Lady Blanche (Gibbons), pure white, a most useful variety, of very free habit, and particularly useful for bouquets, as it has a good pod that does not burst; Clark's Lord Lyon, a very fine deep rosy purple variety, a little late, but very free and distinct in character; and Mrs. Pettifer, dark maroon centre, broadly edged with white, dwarf habit, very free, and quite distinct. There are others, but these represent the very cream of about a dozen varieties. One great essential, according to the "Gardeners' Chronicle," to the successful cultivation of forcing Pinks is that they be well established in pots at this season of the year, and further, the plants require to be brought on gradually in a cool, well-ventilated house. During the time they are kept close they are apt to become infested with green fly, but fumigation by means of Tobacco smoke, or a washing with Fowler's Insecticide, soon clears them of that pest. About the middle of December the plants require to be placed in a gentle heat, and to be kept as near the glass as possible; a little weak manure-water should be given them twice a week. Pipings are taken in spring, and struck in the same way as Tree Carnations, but planted out in a suitable bed when rooted, that is, if the weather be of a sufficiently genial character; they should be kept growing freely all the summer, and potted early in the autumn for forcing into bloom.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Primula cortusoides amœna.—Crowns of these beautiful Japanese Primulas are already starting into growth, and where re-potting has not been attended to it is time to see that it is done. The old stools should be turned out of the pots which they occupy, and shaken free of the soil; then the crowns—each with a portion of root attached to them—should be separated from the rest, and be repotted in some good soil, either singly into large 60-sized pots, or, what is much the best, at the rate of six crowns into a 24-sized pot. These latter will produce a fine head of bloom, and will assist to make a greenhouse look gay in the spring. All the varieties of amœna require the same treatment.—A.

Cestrum aurantiacum.—I shall be glad of any information that you can give me with regard to the cultivation of this plant. Some years ago I saw a very fine specimen of it in the Crystal Palace about this time (November). I was covered with orange-coloured blossoms, and presented a most charmin appearance. The temperature of the Palace was far from warm—not much above 40° Fahr. It must, therefore, be well suited to a moderately warm greenhouse.—H. B. [A moderately warm greenhouse will suit it perfectly; but, as it grows to a good size, it succeeds better planted out than in a pot. A fine specimen of it used to grow in the central bed of the large conservatory a Chiswick.]

PINUS INSIGNIS BEST WHEN FULLY EXPOSED.

No Pine seems to thrive and grow so freely in the grounds here as this, when planted on an elevated, well-drained situation. On a hill at Sprydoncote, fully exposed to the wind which blows direct from the Dartmoor Hills, some twenty-five or thirty miles off on the west, and also open to the north and east, plants of P. insignis, planted sixteen or seventeen years ago, are now fine young trees twice the height of P. austriaca, and one-third higher than P. excelsa, Abies Smithiana, and Wellingtonia, planted at the same time, the latter being sheltered by other trees. Even where fine young English Oaks made no progress, young plants of P. insignis, 2 ft. high, bought in and turned out of pots two years ago on the same ground, have this season made shoots 15 in. and 16 in. long, not only in the case of the leaders, but in that of whorls of six or eight shoots from the same joint. Among kinds which thrive best thus exposed, are plants of Picea nobilis, planted five years ago; during the past two years some of these have made shoots 18 in. long each year. Picea Pinsapo, P. Nordmanniana, P. grandis, and evergreen Oaks, also do well, while Abies Williamsoni appears to suffer much from the wind. P. insignis succeeds here in high sites, both in clayey ground and on sandy soil, when well drained, but it keeps its rich green colour best in good loam where the drainage is good. In our home nursery here, which is a deep, heavy loam on a low ground, where trees, as a rule, grow remarkably well, we lost the whole of our stock of P. insignis, Cupressus torulosa, &c., in the severe winters of 1860 and 1866, and young plants of evergreen Oak were killed to the ground, while the same sorts in the pleasure grounds about 500 yards off were quite uninjured. P. insignis is one of the most beautiful of Pines, and should be more extensively planted for ornamental effect than it is.—John Garland, *Killerton, Exeter.*

Mrs. Pince's Black Muscat.—With regard to this Grape I note your correspondent "H.'s" remarks in your number for November 11. I wish to say, however, that, from my experience, Mrs. Pince is one of the very best late Grapes in cultivation. It is true that it sometimes sets its fruit badly, but so do several others of our Muscat Grapes, notably Muscat of Alexandria and Cannon Hall Muscat, but the difficulty is generally overcome by skilful thinning. My house is a large span-roofed one, containing Muscat of Alexandria, Black Muscat, Madresfield Court Muscat, Meredith's Alicante, and Mrs. Pince, much the largest space being devoted to the latter. No particular pains are taken, and all are treated alike. Mrs. Pince is as black as a Sloe, and carries a first-rate bloom. I have grown this Grape side by side with Lady Downes, Alicante, and Barbarossa (Gros Guillaume) for some years, and I have so firm an opinion that Mrs. Pince beats them all both as to flavour and keeping, that I built the above house chiefly for the culture of this variety.—W. Roden, M.D., *Morningside, Kidderminster.*

Pheasants Poisoned by Yew Leaves.—About ten days ago, one of a number of pheasants, suspected to have been poisoned, was sent to me for analysis. On examining the alimentary canal and its contents for the mineral and vegetable substances most commonly used in malicious poisoning, none were detected; but in the craw I discovered Yew leaves. Comminuted leaves of the same noxious plant were also found in the gizzard, and by its odour, &c., distinct evidences of its existence in the intestines were likewise obtained. The pheasant in question having died under suspicious circumstances, no poison having been detected by the ordinary chemical tests, and Yew—a well-known poison to many animals—having been discovered in considerable quantity throughout the whole of the alimentary canal, I reported that, in my opinion, the bird was killed through the eating of Yew leaves." This case is so unique that, although during the last fifteen years I have had to chemically investigate no less than from 600 to 700 cases of poisoning in many kinds of the lower animals, I have never before met with, or even heard of, an instance in which Yew has proved fatal to birds.—Richard V. Tuson, F.C.S., in the "Field."

The Vine in France.—Of all the elements of wealth in which France is so rich, none contributes so powerfully to the prosperity of that country as the Vine. France exports more wine than all other countries taken together, though the Grape ripens to perfection in Italy, Greece, and Turkey, in Spain and Portugal, in Germany and Austria, throughout Western Asia, where indeed it appears to be indigenous, in Australia, South Africa, and the United States of America. From the plains of Champagne to the shores of the Bay of Biscay, and from the banks of the Loire to those of the Rhone, the cultivation is general. It occupies over five millions of acres, or a fourth more than the area under wheat in the United Kingdom. It gives employment to at least seven millions of people, and it produces on an average every year a harvest valued at one hundred and twenty millions sterling. It may be judged, then, how terrible an enemy the new Vine pest must be under those circumstances.

A Useful Society.—A society has been formed in London called after the Man of Ross, who did good by stealth and blushed to find it fame; it is called therefore the Kyrle Society. No donation or subscription is required to become a member, but sympathy with the objects of the society will be thankfully received. These are chiefly to make bright the dwellings of the poor by planting trees and flowers in their neighbourhoods, hanging pictures, decorating walls, organizing concerts, putting down the nuisance of smoke and bad smells, and otherwise trying to bring gladness into men's homes. Any officer of a working men's club, reading-room, school, or other place of resort, in need of objects of taste to make them pleasant, is invited to make known his wants to the Hon. Secretaries, 14, Nottingham Place, W. Miss Octavia Hill is the treasurer of this novel society, which is a guarantee for its honesty of purpose as well as its practical character. The courage required to start a work of this nature in London, and keep it up, is worthy of admiration.—"Examiner."

The Future of the Royal Horticultural Society.—Your insertion of the "Supplemental Circular" and of letters continues to bring in excellent names of would-be Fellows; and, what is better still, requests for a supply of circulars, with which they promise to canvass their neighbourhoods. A little steady and continuous work and the thing is done. The Council will be only too glad when they find, at the time of giving up the South Kensington Garden, all the elements of a vigorous, real Horticultural Society ready to their hand. I would especially urge on all gardeners who have any influence over their employers to induce them, if possible, to become Patron Four-guinea Fellows, or at least Guinea Fellows.—George Wilson, *Heatherbank, Weybridge Heath.*

NOTES AND QUESTIONS—VARIOUS.

The Madresfield Court as a Late Grape.—However bad this Grape, as regards keeping, may have proved to be with some growers, I cannot omit stating that with me it is most satisfactory up to the end of January. I find no difficulty in keeping it in good condition from August to that date.—Thomas Challis, *Wilton House, Salisbury.*

Box for conveying Plants.—Could any of your readers give me some hints as to the construction of a box in which to bring home any small plants one may pick up during a foreign tour of a few months? It must be portable, capable of being easily opened, and strong enough to resist the rough treatment of foreign steamers and railways, and if the internal fittings took to pieces so that the box could be used for other articles until wanted for plants, so much the better.—W.D.

The Snowdrop Tree.—The statement (see p. 506) that the English name of Chionanthus virginica is Snowdrop Tree is, I think, a mistake. The shrub of which I believe Snowdrop Tree to be the English equivalent is Halesia tetraptera, and the English, or rather the American synonym of Chionanthus virginica is Fringe Tree, from its blossoms resembling cut paper fringe.—W. E. Gumbleton, *Belgrove.*

Magnum Bonum Potato.—At the Royal Berks Root Show, which took place on the 25th ult., Mr. Bellis, gardener to Major Thoyts, of Sulhampstead, exhibited a huge heap of the Magnum Bonum White Kidney Potato, in all 276½ lb., the produce of 1 lb. of seed tubers. Magnum Bonum, in spite of its robust growth and late ripening, has the reputation of being very free from disease. It is a fine table variety, white in the flesh and mealy, and a heavy cropper. Probably when better known it will be largely grown for the London market trade.—A. D.

Endive, Cooked.—In reply to your correspondent's inquiry (see p. 516) allow me to say that the cook here tells me that the Batavian and Green Curled Endive are equally good when cooked. Endive is usually sent to table as a second-course dish, and is much esteemed.—John Garland, *Killerton, Exeter.*

Deodar Cones.—A Deodar here is covered with young cones, which are borne singly along the uppermost sides of the thicker branches, and not on the young shoots. The tree on which they occur is quite 50 ft. high, and the circumference of its trunk at 1 ft. from the ground is 6 ft. 3 in. A Wellingtonia growing near it is about 40 ft. high, and has a circumference of 7 ft. at 1 ft. from the ground.—H. Harris, *Denne Gardens, Horsham.*

Cropping North Walls and their Borders.—I am glad to see this subject receiving attention in your columns. I have a north wall covered with Morello Cherries and White and Red Currants. On the border are three rows of Gooseberries, consisting of Warrington, Whitesmith, and Late Red, and between the Gooseberries are Frogmore Late Pine and Oxonian Strawberries. My Warrington Gooseberries are on stems 2 ft. high, which keep the branches off the ground, thereby preventing the fruit from getting spoiled by grit. My mode of netting does not differ from that mentioned by your correspondents.—W. N.

Jerusalem Artichokes unsuitable for Cottagers.—A correspondent has drawn attention (see p. 488) to the Jerusalem Artichoke, which is certainly too little regarded, but there is no doubt that further information upon its management would be desirable. There is a great waste in peeling Jerusalem Artichokes, which are very irregular in their form and frequently thickly set with fibres proceeding from points and irregularities on the surface; but as they will not peel when boiled, like Potatoes, and as they are very black when boiled without being completely pared, they are not well suited for cultivation by cottagers, although they are excellent in taste, and wholesome, nutritious, and agreeable as an article of food.—X. Y. Z.

No. 264.] SATURDAY, DECEMBER 9, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

WINTER FLOWERS OUT-OF-DOORS.

A GLOIRE DE DIJON Rose tree is now in full leafage and blossom on the gable end of a cottage in Upper Tooting. The old monthly China Rose is also producing its delicate pink blooms profusely, and in the same locality Chrysanthemums are still in great beauty in shrubbery borders. Veronica Andersoni is finely in flower in villa gardens everywhere, and the golden-flowered Jasminum nudiflorum rivals the crimson or scarlet-fruited Cotoneaster Simonsi and the Pyracantha in brilliancy. Anemone blanda is pushing its purplish-blue buds through the cold earth in Mr. Barr's bulb grounds, and A. hortensis, or a delicate pink form of it, is in full flower, while A. fulgens is already in full leafage, and should frosts and snow hold aloof, an early bloom seems almost a certainty Crocus Cartwrightianus is flowering freely, as indeed it has done for weeks already, and is a strikingly pretty plant, with white, lilac-flushed flowers, having bright yellow anthers and a scarlet stigma. This plant is known in some gardens as C. sativus superbus, and by some it is considered to be the wild form or type of C. sativus. C. albiflorus is a delicate little plant with pallid lilac-flushed flowers, the anthers being nearly white, and the stigma yellow; this is one of Mr. Maw's discoveries, and was found on the hills near Carso above Trieste. C. Fleicheri is another little gem, evidently nearly allied to C. Boryi, the flowers being white or lilac, with a distinct purple-feathered stripe behind each petal, the anthers being nearly white, and the stigma golden; the flowers are very small, but of exquisite shape, and the colour is very variable, some blooms being nearly white, and others almost purple. Of all December flowers, however, the choicest we have seen is Iris alata, or more properly Xiphion alatum, which has just flowered in Mr. Barr's nursery. In habit the plant resembles a small Leek, having distichous, soft, green, sheathing leaves, and a large, greyish-white bulb, the flowers produced by which are nearly 3 in. in diameter, and are borne erect from the centre of the plant on a long, whitish tube; the fall petals, which are elegantly frilled, are of a deep lilac-blue, marbled with white, and have a golden-yellow, slightly hairy keel; the standards are narrow, erect, and have crisped margins, the anthers being nearly white. This plant is certainly one of the most charming of all hardy flowers. Christmas Roses are throwing up a few of their waxy-looking flowers, which, however, require some slight protection, or they become spoiled by the heavy rains which are now so prevalent. The scarlet Ixia-like Schizostylis coccinea is still flowering on warm borders, but this, like the last-named plants, requires some slight protection from wet and rough winds. Late-rooted cuttings or transplanted Pansies and Violas still afford a few flowers and buds, and Primroses are peeping out here and there among the fresh green leaves. Some small plants of P. auriculæflora (the dark crimson variety) were in bloom the other day in pots, the only shelter they received being afforded by a Privet hedge; hardy Cyclamens, too, in pots or on sunny rockwork still continue to produce their delicate little flowers. All the plants just alluded to are in the open air, and without any artificial protection except the shelter afforded by walls, or trees and shrubs; and, in addition to those mentioned above, there are many little gems which would continue to bloom all through the winter and spring, if a cold house were provided for them, all they require being shelter from the action of rain, frost, and snow. In London nurseries, Viola Cloth of Gold, and V. Cliveden Purple, are in bloom; and the bright blue flowers of Lithospermum are likewise still being produced in considerable quantities; as are also the fresh white flowers of Iberis semperflorens. Potentilla alba, and one or two other plants, are still flowering freely on some rockwork in the Wellington Nursery. The Japan Allspice (Chimonanthus fragrans) is now in bloom on sunny walls, as are also Solanum jasminioides and Cydonia japonica, the latter here and there displaying its bright coral buds. Phygelius capensis another excellent late-flowering wall shrub, is still laden with crimson buds and tubular pendent flowers. A few delicate blue blossoms are still visible on the dwarf Periwinkle on sunny rockwork, and the elegant spray-like growths of this plant are admirably adapted for cutting, as they last a long time in beauty in vases. B.

The Maiden-hair Tree and Huon Pine at Longleat.—There is a good specimen of Salisburia adiantifolia growing at Longleat; its height is 64 ft., and its girth 5 ft. 9 in. at 5 ft. above the ground. The stem is perfectly straight, containing upwards of 40 cubic feet of timber; it is rather bare of branches on one side, the result of allowing a very large Larch tree to grow too close to it. I, however, cut the Larch down some seven or eight years ago, and since then the Salisburia has thrown out several branches on the bare side, and has altogether improved and grown very much in every way since it received more room in which to properly develop itself. Its habit is somewhat similar to that of the Larch, tapering to a very narrow top. I cannot discover the age of this tree, but should guess it to be about sixty-five years old. Can any of your readers tell me where a larger specimen of Maiden-hair tree may be seen? We have also two other rare Conifers growing at Longleat, viz., Dacrydium Franklini and Araucaria Cunninghami. The former is 31 ft. high, very slender, but remarkably graceful in habit; though its drooping whipcord-like branches nearly reach the ground, their spread is not 3 ft. in diameter. This would be an excellent and becoming tree with which to adorn a cemetery. The Araucaria Cunninghami is 39 ft. high, and girths 3 ft. 2 in. at 5 ft. above the ground; it has a clean, very round stem, carrying its girth well up, and is rather sparsely branched until near the top, when it forms a bundle or dome-shaped head. These are growing on the Oxford clay formation.—GEORGE BERRY, *Longleat.*

Planes on the Thames Embankment.—Owing to certain paragraphs which have appeared condemning the management of these trees, we were led to examine them, and have merely to record that we have never seen a finer batch of young trees. Instead of being in bad health or suffering in any way, they are, over the greater portion of the older Embankment, models of health and vigorous development. We remember a well-known nurseryman saying, when they were first planted, that the strong winds by the river would injure the foliage and prevent healthy growth. Nothing of the kind has taken place; in fact, the main care which the first plantations will require for the future will be the removal of every second tree in good time. The younger plantations promise equally well. They have been pruned a good deal with a view to keep their heads sufficiently open to allow the wind to pass through them. About two years after the first plantation was made, a high, tornado-like wind blew the heads off a number of trees near the Charing Cross Bridge. The oldest trees seem now to have arrived at a state when they require no staking, pruning, or other attention.

Finely-flowered Eucharis amazonica.—It is stated (see p. 518) that a plant of this Eucharis, in Mr. B. S. Williams's Nursery, had produced 25 flower-stems and 125 flowers. I have a plant of it now in bloom in an 18-in. pot, on which there are are 36 flower-stems, and as each bears on an average 5 flowers, the result is a total of 185 flowers. I exhibited this plant in August last year, when it had 38 flower-stems and 96 fully-expanded flowers, and it has bloomed thrice since that time, though it has not been potted for three years. I have eleven more plants of this Eucharis in bloom at the present time, their flower-stems varying from 18 in number downwards; indeed, there are but few days in the year on which we are not able to gather blooms of this most useful winter-flowering plant, and with a little different treatment we can have a large quantity at any time when we may require them.—J. STAPLES, *Chipstead Place, Sevenoaks.*

Box for conveying Plants.—Allow me to state in reply to "W. D." (see p. 536), that, in my opinion, the best plan would be to get a set of Parisian boxes, which can be obtained by any Paris agent or commissionaire. They are made of various sizes, fitting into one another, ten boxes occupying a space of 2 ft. long, 1 ft. broad, and 1 ft. deep. They are made of Beech wood, say veneers about one-eighth to three-sixteenths of an inch thick, very light, and very strong; the top, which is on hinges, easily opens and closes. I send plants in these boxes all over the world, and have some here which have been four times sent to England and returned safely.—MAX LEICHTLIN, *Baden Baden.*

Culture of Nierembergia rivularis.—This both grows and flowers freely with me. It is planted on a mixed herbaceous border, about 1 ft. from the Box edging, in a rich, somewhat sandy soil. It has formed a tuft about 18 in. in diameter, its leaves lying close upon the ground. Nothing could be more lovely than its pure white flowers, which were produced last Midsummer in such profusion as to resemble a patch of snow, the whole plant being only about 4 in. high. It divides freely in spring and summer, but I have found, to my sorrow, that if it be disturbed in autumn, it rarely survives through the winter months.—R. P.

NOTES OF THE WEEK.

The Giant Viper's Bugloss.—The plant illustrated in colours in this issue of The Garden is probably not familiar to many in this country. It may not be amiss, therefore, to state that no more beautiful object can be imagined. We first saw the species now figured in Mr. Hanbury's garden, near Mentone, forming roundish bushes from 3 ft. to 4 ft. high. From these stood erect, noble spikes of densely-packed, Gentian-blue flowers, very distinct in aspect from anything in our gardens. In the south of France it thrives in the open air throughout the year; it perhaps would do so in the south of England on dry soils, and it would, of course succeed elsewhere with us in well-lighted, cool houses.

Van Houtte's "Flore des Serres."—Many of our readers will be pleased to learn that Madame Van Houtte intends to continue the publication of the "Flore des Serres," conducted so successfully for many years by her late husband. For the future it will be edited by M. Planchon, of Montpellier, who, both by training and ability, is well fitted for the duty.

Revival of the National Rose Show.—A very large meeting of rosarians and other horticulturists, presided over by the Rev. Canon Hole, was held on Thursday afternoon, at the Horticultural Club, Adelphi Terrace. It was unanimously proposed to found a National Rose Society, and in connection with it an Annual National Rose Show. Many liberal donations to the Society were made by those present, and the subscription for members was fixed at 10s. a year. The secretaries are the Rev. H. H. Dombrain and Mr. Horace Meyor, to whom at 3, Adelphi Terrace, Strand, W.C., donations and subscriptions may be sent by those who wish to aid the objects of the Society.

Oncidium Cheirophorum.—A remarkably fine plant of this beautiful winter-flowering Orchid is now in bloom in the Exotic Nursery, Chelsea. It is growing in an 8-in. or 9-in. pot, and is bearing from ten to twelve graceful flower-spikes, thickly beset with small, rich, golden-coloured blossoms. Such free-flowering plants as this can hardly be too highly prized where a supply of bloom during the dull months is desired.—S.

Saxifrages in Winter.—These useful plants are becoming popular, and many nurserymen are increasing their stock of them to such an extent as to lead one to believe that they expect ere long to see "carpet bedding" carried out in winter to as great an extent as it has lately been in summer. The fresh glistening appearance of the mossy kinds is charming in winter.—P.

New Seedling Poinsettia.—Messrs. Veitch have succeeded in raising a seedling Poinsettia, which promises to fairly eclipse all other single kinds yet produced; several plants of it are now in bloom, and, when placed side by side with well-grown samples of P. pulcherrima, show a decided improvement on that kind, both as regards richness of colour and shape of flower bracts.—S.

Hibiscus Colleri.—A large plant of this new form of Hibiscus in Mr. Bull's nursery at Chelsea still continues to open numerous large and handsome creamy-yellow-coloured flowers. The plant in question was in bloom during the summer months; and as the flowers die off new growth is made, and a succession of bloom is the result. It is therefore evident that this plant, in addition to being one of the finest of its class, will prove a great acquisition to our lists of winter-flowering stove plants.—S.

Abutilon Sellovianum variegatum.—Well-grown plants of this Abutilon have a charming effect at this season when associated with Palms, Ferns, and other green-leaved plants, their large golden leaves richly tesselated with green, possessing a brightness seldom found in soft-wooded, fine-foliaged plants. This Abutilon also deserves to be more extensively grown for table or vase decoration than it is at present.—C.

Aphelandra Roezli.—Large quantities of this plant are now coming into bloom in the Chelsea Nursery, where they will soon be very effective. Considering the usefulness of this Aphelandra and the ease with which it may be cultivated, it is surprising that it is not more frequently met with in quantity than it is. Plants of it grown in 48 or 32-sized pots make handsome little bushes for the front rows of stages in warm conservatories, or for furnishing small vases, positions in which their ornamental foliage and brilliant flame-coloured blossoms render them very effective; and, under judicious treatment, they continue long in bloom.—S.

Bomarea Carderi.—A fine plant of this greenhouse climber is now producing large trusses of delicately-coloured bell-shaped flowers in Mr. Bull's Nursery, in the King's Road. As may be expected their colours are much paler now than earlier in the year, but this adds rather than detracts from their beauty. Each truss consists of from eighteen to twenty-five large drooping blossoms, and when such trusses are plentiful the effect is strikingly beautiful.

Clerodendron splendens.—This useful old stove or warm greenhouse climber, though seldom seen in perfection nowadays, is one of the best for decorating the roofs of glass-houses at this season of the year. A fine plant of it is now in full flower at Messrs. Lee's nursery, Hammersmith, where its brilliant clusters of crimson-scarlet blossoms and its healthy dark green foliage are strikingly effective.—S.

Laburnum Flowers in Winter.—I have sent you a small branch off a Laburnum tree which will serve to give some idea of what may be grown with success out-of-doors in this county, for if the Laburnum blossom on December 1 as this has done, nearly anything not a stove plant may be cultivated outside with a little care. The branchlets sent, as will be seen, are covered quite thickly with bloom.—R. W. Penrose Fitz-Gerald, *Cork Beg Island, Whitegate, Co. Cork.*

Mr. James' Cyclamens.—Seedlings of these now in bloom at Isleworth are bearing flowers which for size and purity of colour, have few equals. The white kinds especially are unusually good, and the rose-coloured varieties, though they never attain so large a size as the lighter sorts, are also charming. Few winter-flowering plants are so effective as these, or so easily cultivated.—P.

Lælia anceps.—A fine specimen of this most lovely of Mexican Orchids is now in excellent condition in Messrs. Veitch's Nursery at Chelsea; it has eight or nine strong flower-spikes, each of which is bearing from three to five large and beautifully-coloured, rosy-lilac blossoms. As a winter-flowering Orchid this is well known to be one of the most useful as well as beautiful, and the flowers have the good property of keeping long in perfection in a cut state.—S.

New Auricula Society.—At a meeting of florists, held the other day at South Kensington (having for its object the establishment of a southern branch of the National Auricula Society in or near London), it was reported that Mr. Francis Whitbourn had accepted the office of president, and had offered a donation of £5 to the prize fund, and that the Crystal Palace Company, in whose grounds the Auricula exhibition will be held, had promised a donation of £10, and named April 24 as a suitable day for the show. Mr. Turner, Mr. Dodwell, and Mr. Douglas were nominated a sub-committee to arrange a schedule of prizes for Auriculas and Polyanthuses. Subscriptions amounting to upwards of £40 have been promised, and further offers of support may be sent to Mr. E. S. Dodwell, Larkhall Rise, Clapham.

Ipomœa Horsfalliæ.—This old and much neglected Ipomœa, when properly treated, makes one of the best of winter-flowering greenhouse or stove climbers. A plant of it trained up the rafters of an intermediate-house in Messrs. Rollisson's nursery, is just now loaded with large clusters of magenta-coloured, waxy-looking, bell-shaped flowers, which, in addition to their fine effect when on the plant, are also valuable in a cut state, a condition in which they last a long time in perfection.

The Violet Cress (Ionopsidium acaule).—Considering the size of this Cress, the power which it possesses of resisting frost and snow is wonderful. We have now (Dec. 4) a bed 50 ft. long and 4½ ft. wide covered with its exquisite little lilac blossoms, which, owing to the mild weather we are experiencing, are unusually fine. I have never seen this Cress do so well anywhere as it does here. Its seeds are self-sown, and in our light, sandy soil, the young plants come up in thousands. Well sheltered, and in a south aspect, they appear to be quite at home.—J. Clements, *Pain's Hill, Cobham.*

Death of an Old Orange Tree at Versailles.—The Paris obituary contains the death of a famous Orange tree in its 455th year, known under the name of Grand Bourbon. In the year 1421 the Queen of Navarre gave her gardener the seed at Pampeluna. Thence sprang the plant, which was subsequently transported to Chantilly. In 1532, however, the Constable of Bourbon (Lord of Chantilly) having sided with Charles V. against Francis I., his goods were confiscated, and along with them the Orange tree, which was duly sent to Fontainebleau, whence, in 1684, Louis XIV. transferred it to Versailles, where it remained the largest, finest, and most fertile member of the Orangery, its head being 17 yards round.

Williams' Large Cyclamen.—There is now a good display of this improved variety of the Persian Cyclamen in one of the plant-houses in the Victoria Nursery, Holloway. The blooms, which are unusually large and bright and distinct in colour, are borne well up above the foliage on stout stalks; the leaves, too, of many of the plants are beautifully marked, and well-grown examples of this Cyclamen have a fine appearance in vases, or in similar positions.

THE INDOOR GARDEN.

CULTURE OF AMARYLLISES.

Few plants are, as a rule, more neglected than these, yet few, even under the worst of treatment, yield a better result. When done flowering, they are stored away in all sorts of odd corners, sometimes on inaccessible shelves, where water seldom reaches them, and at others under stages where they get saturated with water from pots overhead. In short, they are wintered in all sorts of unsuitable places. Let all such neglected potfuls of bulbs be got together, and if they be dormant, keep them rather dry at the roots in the moist atmosphere of a stove; as they show signs of growth, clear them of all sour soil that may be about their roots, and pot them in sandy loam, to which has been added a little rotten manure well broken up, in pots about double the diameter of that of the bulbs; they will soon push roots, when they may receive a copious supply of water and be set in a light, hot place; they should be in a growing state before they are potted, for I have remarked that when such is the case they make greater progress than when potted in a dormant state. Under the treatment just recommended, they will grow away, and should be kept growing until they show symptoms of resting. When that is the case, and when they begin to lose their bottom leaves, gradually withhold water, and when they have become dormant stow them away in a dry, warm place to rest. Thus treated, the result will be, even during the first resting season, strong, healthy bulbs that will yield a few flowers and be ready to do better work for the future. After about a three months' rest, introduce the earlier-ripened ones again to the moist heat of a stove, and if they be slightly sprinkled with water now and then all the better; some of them will soon push up flower-stems, and when such are distinctly visible let the plants receive a good watering. It is important that the flower-stems clearly show themselves before the plants receive much water, or leaves will be produced at the expense of flowers; in weak plants, if the leaves get the start, the tips of the flower-sheaths just show themselves above the necks of the bulbs, and ther remain. Those which flower should have their roots examined as soon as the flowers are off, and if sound and healthy should have a shift into larger pots, using, as before, good sandy loam and well-rotted manure. Those which do not flower should also be potted as soon as it is seen that the leaves start freely; grow them on as before, giving them plenty of room in which to develop the leaves, for unless the plants are ripened thoroughly there will be a paucity of flowers. If this course of treatment be carried on for two or three years, a stock of bulbs will be secured which will never miss flowering, and many of them will throw up three flower-stems at once. Do not be in a hurry to separate the offsets which push from the parent bulbs. They make blooming bulbs quite as soon if left undisturbed as if taken off, and a potful of strong bulbs grown together, when in bloom, has a good effect. Some years ago I had a potful of a variety called A. marginata conspicua on which there were twenty-five flowers all open at one time, and several pots of different kinds with from twelve to eighteen flowers all open at once. When Amaryllises are seen in such a condition as this they are strikingly effective, even though the kinds may not be the most select. In examining clumps of bulbs at the time of re-potting, should any feel loose to the touch, divide them and start each bulb separately as at the beginning, using small pots as before until they have become again established. The largest-sized pots which I have ever used for Amaryllises have been 12-in. ones, but such pots are rarely needed. Potting detached bulbs of the same kind in a large pot destroys the natural appearance of the mass, and is not to be recommended. As to the time of flowering, Amaryllises may be had nine months out of the twelve by gradually pushing on those which show bloom the earliest and leaving the later-blooming kinds to start without encouragement. A. reticulata is rather an exception to the rule as to resting. Like the others, it requires a season of rest, but its leaves, which are of a dark green colour, with a distinct white stripe, seem naturally more persistent than those of the others, and will, with very small encouragement in the winter, maintain their freshness. This kind blooms naturally in July and August, and is of a bright mauve colour veined with a darker shade. It is a pretty variety either in or out of bloom. To this may be added the following large-flowered kinds, which are among the best for winter flowering:—A. aulica, a Brazilian species, the flowers of which are large and showy; they are of a deep red colour, the petals being veined with a deeper tinge and tipped with green, and they open between October and March. It is from this species, hybridized with A. vittata and its numerous varieties, that the late M. Van Houtte, of Ghent, raised the fine large-flowered Amaryllises now so well known. A. equestris, a native of tropical America, has light brick-red flowers. A. reginæ, a native of Central America and the West Indies, has dark red flowers, which usually have a lighter-coloured streak down the middle of each petal. A. rutila, a native of Brazil, has flowers of various shades of red. A. vittata, a native of tropical America, has white flowers, with three red longitudinal streaks on each petal. These kinds are almost exclusively the parents of the wonderfully numerous garden varieties that are now in cultivation. John Bester.

Carmine-tinted Thibaudia (T. glabra).

CARMINE-TINTED THIBAUDIA.

(T. GLABRA).

Thibaudias, though highly interesting Vacciniaceous shrubs, are by no means common. They are mostly natives of Peru and New Granada; but the species of one group belong to India, Java, and Madagascar. T. glabra is not unfrequently met with as a stove or warm greenhouse shrub. The accompanying illustration of it was sketched from a spray shown in a collection

of cut flowers at one of the Crystal Palace exhibitions this year, where its bright colour and singularly fleshy wax-like flowers attracted general attention. Its leaves are oblong, evergreen, and of a glossy deep green above but paler and dotted beneath. The flowers, which are produced in clusters along the slender branches, are white in colour, suffused with carmine at the base of the tube, the thickened fleshy calyx being of a purple tint. They are succeeded by large purplish berries crowned with the limb of the calyx. All the cultivated species grow well in a compost consisting of peat, leaf-mould, and fibrous loam, sufficient sandstone grit being added to ensure good drainage. The dwarf scandent sorts form pretty basket plants, and the shrubby kinds may be planted out in the border of a warm greenhouse or plant stove. B.

LATE BLOOMING TUBEROUS-ROOTED BEGONIAS.

As I promised you a few remarks on the four varieties of late blooming Begonias received from M. Frœbel, of the Newmunster Nurseries, Zurich, which had not opened their flowers when I wrote my critical notes on the new varieties of this year, already published in The Garden, I may now state that I only succeeded in blooming two out of the four sorts there mentioned, viz., Frœbeli and Mont Blanc—the first a species, the second a hybrid raised by M. Frœbel, I believe from a cross between the first-named and B. octopetala. The last-named variety, however, which refused to bloom with me, has been so extremely, and I may add unexpectedly, finely bloomed by my friend, your correspondent, "J. T. P.," and so well described by him at page 405 of your present volume, that I need say no more about it at present. Begonia Frœbeli seems to me to have many merits, not the least of which is, that the smallest tubers seem to bloom abundantly and well, the first tuber received by me from Messrs. Hooper, of Covent Garden, being no larger than a Marrow-fat Pea—in fact, so small that when it dropped out of my gardener's fingers when potting it, being of much the same colour as the earth, he had considerable difficulty in recovering it—nevertheless it has grown so vigorously and well that it is still in most beautiful bloom, and little, if at all, inferior in strength or number of flower-spikes to the plant produced by the strong tuber, six or eight times its size, received from M. Frœbel direct. This variety, however, seems to me to vary considerably, especially in its foliage, that of the first-named tuber being of a pure pale green, borne on shorter foot-stalks than the leaves of the stronger tuber, which, besides being much larger, are of a deeper green ground, and are also covered with a thick coat of reddish hairs like some of the Gesnera family, which hairs are totally absent from the leaves of the other plant. The blooms, also, of the smaller tuber are of a finer and deeper shade of crimson, and of more perfect shape, with the petals coming closer together, and forming more perfect flowers than those of the other plant, which, besides being of lighter shade generally, have also a decidedly whitish centre, and are altogether of a thinner and more flimsy texture. The lateness and long continuance of its blooming season and its apparent indifference to damp, which affect many plants so injuriously at this dull and almost sunless season of the year, seem to me to be also great merits in this variety which should bring it into general request for the decoration of the otherwise almost colourless conservatory during the early winter months, especially as extremely fine freshly-imported tubers can now be obtained from Messrs. Farrow, of Sittingbourne, and Sander, of St. Albans, at a price that should put it within the reach of everyone who has a greenhouse to adorn. Mont Blanc is a most beautiful variety, and quite an acquisition in every way, being by far the finest white-flowered Begonia I have yet seen. It seems very free blooming, and produces its handsome flowers upon tall, erect foot-stalks, holding the blossoms well, and apparently never dropping the male blooms in an unopened or bud state, as unfortunately so many Begonias do, particularly when they commence to bloom. The flowers, when they first open, have an extremely faint greenish tinge on their outer petals, which, however, thoroughly disappears as the flower matures, and bleaches out to the purest ivory white, turning to a pale cream colour as the flower fades. The blooms (especially the male ones) are also of a good size and substance, and the females, though decidedly smaller, are not by any means so inferior in quality as on many varieties, as for instance in the next best white variety, Henderson's White Queen, where the female blooms are so utterly insignificant and worthless that they should be removed as detracting from the beauty of the plant. As to B. octopetala rosea, I much regret my inability to describe anything but the foliage, as, though my plant was a fine strong tuber, and showed two flower-spikes at the base, they both dwindled and damped away when they had grown about ⅛ in. from the ground; the foliage is quite distinct from that of the ordinary octopetala, being of a much more thick and leathery texture, of a deeper shade of green, and with decided black markings towards the centre of each leaf, reminding one somewhat of the handsome foliage of that curious and handsome hardy border plant, Podophyllum Emodi. W. E. Gumbleton.

Belgrove.

The Chequered Meadow Saffron (Colchicum Parkinsoni).—I can only too truly corroborate what old Parkinson says about this beautiful species, which I have cultivated for some years under the name of C. chionense, by which appellation it was known to Hill and Miller and our older botanists. Like its pretty congener C. crociflorum, it annually decreases and gets beautifully less. Hill, in his "Eden," published in 1757, remarks that this species flowers much better if brought into the greenhouse and, best of all, into the stove. I am disposed to think that it will do very well if planted in a pit some 3 ft. deep, and filled with soil nearly one-third of the depth. The lights should be closed at night, and in frost, wet, and snow. I hope to grow it in this way together with C. crociflorum, Merendera caucasica, Bulbocodium, and sobolifera, with which I can do little good in the open ground. If it had not been for Mr. George Wheeler, of Warminster, Colchicum Parkinsoni would probably have been lost to cultivation years ago. It is strange that some of our more enterprising nurserymen have not imported a fresh stock of this very handsome and desirable plant.—H. Harpur Crewe, *Drayton-Beauchamp Rectory, Tring.*

Suspended Pans for Plant Growing.—A good method of bringing plants close to the glass and at the same time economizing space, where that is limited, is practised in Messrs. Low's nursery at Clapton. Common seed-pans have three holes bored at equal distances apart round their rims; through these are put pieces of wires, which are fastened together at the top and supplied with a hook by which the pans are suspended from the roof. In these pans are placed an inch or so of small pieces of brick or lime rubbish, on which are placed the plants, and they serve in some measure to absorb water. Such plants as Crotons, Pandanads, Palms, and Cycads, are placed in the different houses in these suspended pans where most convenient, and the advantages attending the practice may be readily seen by comparing plants thus treated with such as are merely set on stages and further away from the glass. The plants which are suspended are in much better condition, both as regards health and colour, that of the variegated plants being brought out in such a manner as to recommend the system to general adoption. The pans must of course vary in size in proportion to that of the pots which they are required to hold, but the sizes chiefly used at Clapton are 8-in. or 9-in. ones. Almost any kind of plants would doubtless thrive under such treatment, but in such positions those with drooping foliage are the most ornamental. Shelves near the glass are often used for holding plants, but they are both formal and ugly compared with the method just described.—S.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Stokesia cyanea.—I am anxious to know something about Stokesia cyanea and its cultivation. I saw it for the first time last January, when it was blooming beautifully in a greenhouse, with snow deep on the ground around. As a winter-flowering plant of a very pretty colour—greyish blue—it seems a decided acquisition.—H. B. [It is a hardy plant, but flowers so late that it is probably best grown as a winter-blooming greenhouse one, receiving the protection of a pit in autumn until it comes into flower, and is taken into the greenhouse or conservatory.]

Market Plants and the Heating they Require.—In an extensive plant-growing establishment at Tottenham, the heating apparatus consists of over 7 miles of piping warmed by means of seven powerful horizontal tubular boilers, each of which weighs 9 tons. These consume in an ordinary mild season between 600 and 700 chaldrons of coke, 250 tons of coals, and immense quantities of breese. Considering that most of the plants grown are by no means of a tender character, some idea may be formed of the extent to which plant-growing is carried on in some places near London.—S.

COTTAGE GARDENING.

Scarlet Runners.

This useful vegetable, which has long been a favourite, still retains its well-merited popularity. The artisan who has only a small yard for a garden often with considerable labour and ingenuity improvises a bed for Scarlet Runners, and so not only secures a frequent dish of his favourite vegetable—rendered all the sweeter from the trouble incurred in its production — but clothes and beautifies his back premises at the same time. As a vegetable for small gardens this takes precedence of the Pea, and although Scarlet Runners have been cultivated in positions where most other vegetables would fail, yet at the same time scarcely any crop makes a better return for liberal treatment. Depth of soil and plenty of manure are important matters, and the benefits that accrue from autumn and winter culture need not now be enlarged upon, having been so often referred to in these pages. Commence planting from the first to the middle of May, according to the position and latitude of the place. The young plants are very tender, and early-sown crops are often ruined by spring frosts. Plant in drills 6 in. or 7 in. wide, two rows in each drill close to the sides, and the Beans should be planted 6 in. apart in the rows. Draw the drills with a hoe about 3 in. deep, the same as for late Marrow Peas. The rows give a larger crop if they can be isolated, with dwarf vegetables between them. If placed parallel to each other they should not be less than 5 ft. apart, and even more space would be preferable. The second crop should be planted about the first or second week in June; and although in all probability the first crop, if properly managed, will continue bearing till cut off by frost in autumn, yet, if in the event of a dry, hot summer, it should be checked in the midst of its bearing; it is always a good plan to make two sowings. They should be earthed up and staked before the plants begin to run, and the strongest sticks that can be obtained should be reserved, especially if the situation be exposed, as the wind has considerable power upon their thick, close growth. It is important that the Beans should be gathered as soon as fit for use, especially during the early part of the season, as seed-bearing tends to exhaust the plants and stops the production. Later on in the season, when the nights are longer, should it be desired, a few pods may be left to produce ripe seeds without doing so much injury. In small gardens, where land is valuable, they may be planted in circles 2 ft. or so in diameter, with about a dozen Beans round the circumference. The patches may either be grouped together or be placed along the sides of a path convenient of access—of course in both cases leaving sufficient room for the free admission of light and air to circulate between the patches. In some cottage gardens I know this is rather a favourite way of planting them, as it is considered they are more productive when so treated. The strong leaders, when about 4 ft. high, should be stopped, and again when they reach the tops of the sticks, which should be 6 ft. high if possible. This stopping strengthens the plants, keeps them at home, and leads to great productiveness. In hot weather mulching is very beneficial, and two or three good soakings of water during a sudden drought when the plants are in flower, will assist the fertilization and save the crop. Scarlet Runners may also be grown without sticks by adopting a system of close pinching, but in small gardens some mode of training should be adopted, as the space upwards adds nothing to the rent, no matter how densely occupied.

Dwarf French or Kidney Beans.

On a warm south border these may be planted as early as the middle of April; Canadian Wonder and Negro Long-pod are two of the best varieties. Where an early crop is an important consideration, the Newington Wonder, although small, is prolific, and comes in early, but the pods must be gathered when fit for use, as, unlike the larger kinds, they soon get old and tough. Plant in single rows 2 ft. apart, draw the drills with the corner of the hoe from 2 in. to 3 in. deep, and plant the Beans 6 in. apart in the rows. In many gardens they are planted too thickly, and the plants in consequence do not bear so continuously, or so freely, as they ought to do; and, moreover, this thick planting induces weakly growth, that succumbs sooner to drought or any other unfavourable influences. When fairly above ground draw some of the warm, dry surface-soil round the stems to shelter and strengthen them, and gather all Beans as soon as they are fit for use. To secure a plentiful succession, plant a few once a month till the end of June.

Premier Runner Bean.

I mention this Bean because, although hardly so serviceable for small gardens as the Scarlet Runner on hot porous soils, it is worth a trial, being less liable to suffer from the attacks of red spider. It is a climbing variety of one of the Long-podded Kidney Beans—a vigorous grower, and bears long tender pods, not unlike the Canadian Wonder. It should be planted about the same distance apart as the Scarlet Runners, and requires staking in the same manner as that variety.

Broad Beans.

These, like Peas, for a very early crop, may be planted in November, and as they transplant very easily and safely, when autumn planting is adopted, plant them thickly on a warm raised bed where a little shelter can be given in severe weather; then in February, when the land is in good working condition, lift the young plants carefully, with all their roots intact, and plant in fresh, well-prepared ground in rows 2 ft. apart and 6 in. between the individual plants. Another plan is to sow thickly in a box in January, and place them anywhere under glass, or in any warm, sheltered place, and transplant as above stated, pressing the soil firmly about them. These early plantings will, of course, only be on a small scale, for the purpose of securing an early dish or two, as early in February will in most places be time enough to plant the main crop, which may consist of some of the Long-pod section. The Green Long-pod is a good variety for general purposes, and the Seville Long-pod—the longest of the whole—is a very fine Bean, especially for exhibition. Plant again for succession in April, and the Broad Windsor for the latest crop about the middle of May, in double rows 2 in. to 3 in. deep, and the rows should be 2½ ft. to 3 ft. apart; cover the surface of the soil with ashes to protect from mice, and earth up when about 3 in. or 4 in. high. When well in flower nip off the tops; this throws back the strength of the plant into the crop, and if, as frequently happens, the young growths be infested with black aphides, it will be the means of clearing them off. When all the pods are picked off, as soon as they are fit for use, it frequently happens that new growths will break away from the lower part of the stem and produce a good late second crop. It may not always be advisable to leave them for this purpose, but it is as well to have the choice of doing so, and they rob the land less in this way than if a part of them be left to get old before being pulled up. The soil most suitable for this crop is a strong, heavy loam, but a fair return may be expected from almost any soil; light land should be made firm before planting.

Cauliflowers.

In the Midland and Northern Counties Cauliflowers cannot be relied upon to stand the winter without some protection. Of course there is nothing so good as glass in some shape, and although I hope to see the time when every cottage gardener who really loves his garden may have his frame or turf-pit, yet at the present time such aids to cultivation are not generally found; but by sowing and planting the early crop in the warmest positions, by frequently adding dry ashes to the young plants to prevent damp settling round the stems, and at the approach of cold, frosty weather, applying some thin shelter that will protect without weakening. Cauliflowers may easily be wintered. A few evergreen branches, staked amongst the plants, or laid over them without touching them, will generally be sufficient; fronds of Bracken will answer even better, or a few dry leaves scattered amongst them will also be effective. Simple contrivances are often more serviceable if put on and removed at the right time than more elaborate protection thoughtlessly used; it should always be borne in mind that protection, except in the most severe weather, is neither necessary nor desirable. By adopting the means I have just recommended there is nothing to prevent the humblest cottager having his Cauli-

flowers ready in June, and a man of limited means within reach of a town will find this a very paying crop to grow. Sow from the middle to the end of August, according to situation and season. There is nothing gained by sowing too early, especially where only one sowing is made, on account of the tendency of the early-sown plants to bolt prematurely. It has generally been the custom to recommend such plants to be pricked out at the foot of a south wall to stand the winter on account of the warmth and shelter afforded, but I very much doubt the wisdom of such a proceeding, unless the plants can be shaded from bright sunshine during severe weather, otherwise the extremes of temperature will cause more losses than if the plants had been wintered in some open, fully-exposed situation sheltered in the way I have suggested. The same objections do not apply with so much force to the south side of a hedge, as the constant circulation of air prevents in a great measure any ill effects arising from bright sunshine when followed by frosty nights. After all danger from severe frosts is past, the foot of a south wall is a most desirable situation in which to plant the earliest patch, as they will be free from that alternate thawing and freezing to which they would be exposed in such a position in winter. The Early London is a good kind to sow for early work, and if at the same time just a pinch of the Walcheren and Veitch's Autumn Giant be sown, a succession may be secured without much further trouble. When the young plants are large enough to handle prick them out into some dry, warm bed, bearing in mind the hints just given about the destruction often caused by alternations of frost and thaw during severe weather without the true cause being always suspected. Give them sufficient space in order that they may form vigorous young plants; not less than 3 in. apart will be necessary, and even more if it can be spared. About the end of March plant them out finally on land that has been thrown up roughly and well pulverized during winter. Draw rather deep drills 2 ft. apart, and plant in the bottom of the drills 18 in. apart. Inexperienced planters often make a mistake in not fastening the plants firmly in the soil, especially where a dibble is used, but in moving any that have been pricked out a trowel is the proper implement to use; but whether planting with a trowel or dibble the plants should be fixed in their positions with a moderate degree of firmness, somewhat resembling those they previously occupied. Where this operation is not attended to the plants are a long time before they make a fresh start, and of course valuable time is thereby lost, and some of the plants not unfrequently perish. The other culture consists in frequently stirring the soil during the early season, drawing a little earth up to the stems each time; liquid manure, if it can be obtained, will pay well for any labour or trouble incurred, and on dry, porous soils, mulching will be very beneficial. For late summer and autumn use sow a pinch of the Walcheren and Veitch's Giant about the middle of April and again in the middle of May. These sowings may be planted out direct from the seed-bed, whenever and wherever vacant land in good condition can be spared. Usually an open position is the best, but during hot summers, if a cool, partially-shaded spot be available, it will be very useful, not only for Cauliflower but for many other plants. Those who have a frame or a turf pit (the latter especially is a very cheap and useful structure, which will be referred to more fully hereafter) may delay the sowing till September 1, and sow in the pit either in a box or boxes. In such a position the seeds will vegetate with certainty, without any danger of the buds destroying the young plants as they come up. Where there is a turf pit, there is no better way of managing young Cauliflower plants in winter than putting them into 60-sized pots when large enough to take from the seed-bed or box, plunging the pots into sawdust or anything similar that will keep the roots moist and comfortable, fitting them as close to the glass as possible without absolutely touching it, ventilating abundantly when the weather is favourable. Any one who has noted how such plants start away when planted out in March or April will not begrudge the little extra labour involved by such operation. Young plants with plenty of healthy young roots may be moved without receiving any check, whilst plants pricked out close together in the ordinary way, no matter how carefully moved and planted, must lose a great number of their best roots. I may just mention now, that in the early stages of growth soot or lime may be dusted over them occasionally to keep slugs at a distance; and this refers equally to all the other members of the Brassica family, which I shall notice further on. Birds also are very partial to their seeds, and wherever the feathered tribes are plentiful some means must be adopted to protect the seeds from their ravages. There is nothing better or cheaper in the long run than covering with old fishing nets, raised a few inches from the ground on sticks. Cotton or thread, crossed and re-crossed over the bed, will often scare them for a sufficient time to enable the young plants to get out of their reach. E. Hobday.

Cucumber-eating Snails.—"S." (see p. 525) speaks of the Cucumber-house at Gunnersbury being infested by a small snail which he calls Bulimus acutus. I think he must be misinformed as to the name of this snail, as the one he mentions is only found on lands near the sea-coast; the species with which he is troubled is most likely Bulimus Goodalli. It is a West Indian species, and was first observed in England upwards of fifty years ago at the nurseries of Miller and Sweet, now Garraway's. Since then it has been observed in many Pineries and stoves, and I think I saw it noticed recently that it had been seen in a Cucumber-house at Weybridge; in fact, it is now very generally distributed. Bulimus acutus is quite ½ in. in length, whereas B. Goodalli is not half that size, and is white.—John E. Daniel, 6, *The Terrace, Epsom.*—[Mr. Daniel is quite right. The introduction of Bulimus Goodalli had escaped our memory, which it should not have done, for we received specimens of it from Mr. G. F. Wilson when first found in his garden at Weybridge.]

Parsley Protectors.—The now well-known arched Pea wir guards can be utilized for the protection of Parsley during severe weather if covered with a piece of oiled calico stout enough to throw off wet, which, as well as the covering material, should be kept off the crowns of the plants. To use these guards, however, to the best advantage, the Parsley should be sown in a row close by the side of a path where the covering could be put on and removed with facility. Seed sown in May would produce an abundance of leafage for winter use, and the plants need only be moderately thinned, as it is desirable to have as much foliage beneath the covering as possible. The protectors would, perhaps, not require to be used until after Christmas, and even then only during frosty weather, as whilst it is mild and open the plants will continue to grow. When hard weather sets in the protectors should be placed in a line over the plants, and over them might be laid old sacks, litter, or any dry covering, all of which will admit of easy removal when Parsley is required. Where there is room in Vineries, orchard-houses, and other places, an abundance of Parsley might be obtained if good, strong single plants be lifted and put into 6-in. pots in time to be established before it is necessary to gather from them.—A. D.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

November-sown Peas.—Seven years' experience here and many more in different parts of England, tells me that if early Peas be required, November is the month in which to sow them. Coat them with red lead to keep away mice, bestrew them with coal ashes to keep away slugs, string them to keep away birds, and lastly stake them early to withstand March winds. In this way Peas may be gathered seven days earlier than if sown in spring.—R. Gilbert, *Burghley.*

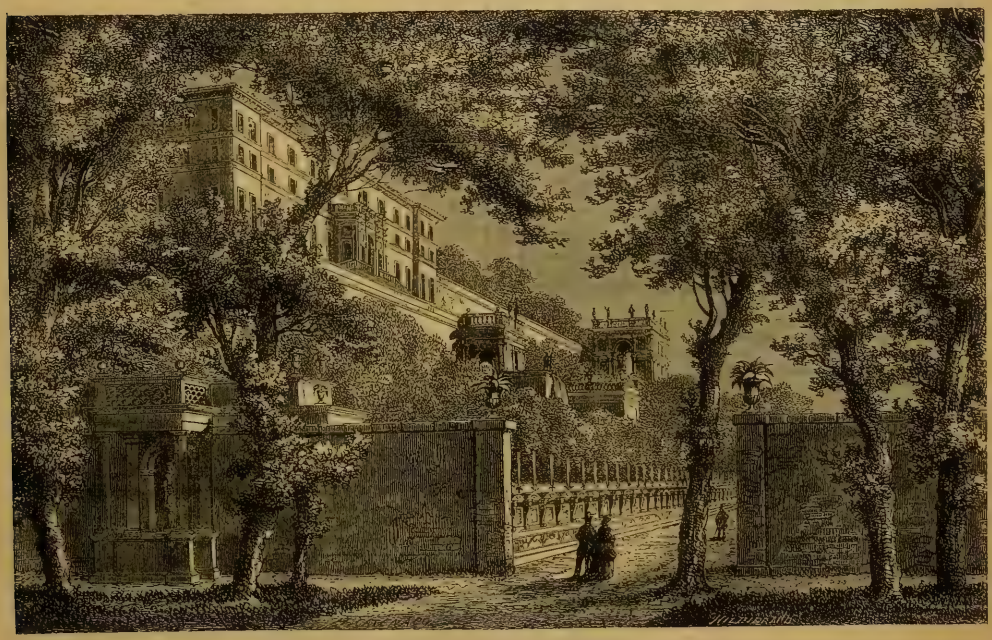
New Seed Pocket Filler.—At the meeting of the Royal Horticultural Society, held on November 8, Messrs. Blake & Mackenzie, of Liverpool, exhibited an ingenious machine for gauging any given quantity or weight of flower or vegetable seeds in a rapid and efficient manner. It is simple in construction and deserves notice as an appliance likely to save both time and labour.

Rain-water and its Constituents.—One of the constituents of rain-water, as influencing the growth of plants, is instructively illustrated in a paper by Prof. Church in the "Agricultural Students' Gazette." The quantity of common salt in rain-water collected in the gauges at Cirencester College, has been systematically measured for a long time past, and the result is an estimate that the average rainfall there ensures a supply to the soil in the year of no less than 30 lb. of salt per acre. Cirencester is about thirty-five miles from the Bristol Channel.

Mercury or Good King Henry.—There are but few gardens without this plant in North Lincolnshire; nine out of every twelve cultivate it. It is much thought of when cooked in farmer's style—boiled with bacon. If it were better known it would be more cultivated. It has many valuable medicinal properties, and is far superior to Water-cress as a spring diet. The seed is not sold by the seedsmen; it is cultivated in the same way as Rhubarb, by dividing the roots. There has been a good deal of correspondence lately about this plant in the "English Mechanic." It is really deserving of cultivation in gardens generally, being as easily grown as any perennial weed, and affording a wholesome and distinct vegetable in spring. Its botanical name is Chenopodium Bonus Henricus.—V.

GARDEN OF THE VILLA D'ESTE.

The Sabine Hills, which skirt the Campagna of Rome to the south-east, may be said to have formed the Richmond of the Romans, both ancient and modern. Among the crests of these picturesque mountain ridges Horace had his villa, and Cicero his elegant Tusculan retreat; the Emperor Hadrian, too, made another spot in the same region beautiful with all that the most famous architects of his day could devise, and by the assembling there of all that the Roman world would produce in sculpture, painting, and various other arts. Of the little delizia of Horace even the precise site is unknown, and of Cicero's villa and the country palace of Hadrian only a few ruined walls remain to attest their former beauty and magnificence. But the scene itself has lost none of its original charm, and as soon as the nobles of modern Rome began to emerge from the semi-barbarism, which was a legacy of the northern hordes that overran and plundered the beautiful plains of Italy, they were quick to perceive and appreciate the beauties of the hilly region where the small mountain towns of Tivoli, Frascati, and Rieti had arisen from the ruins of their ancient parents; and soon, villa after villa arose on the old sites, each more splendid than its predecessor. Thus, excepting a gap of a few centuries, it may be said that from the time of Horace to the present day these lovely hills have been the favourite summer retreat of the denizens of the Eternal City. It is also certain that, in the main, the same style of somewhat formal decorative gardening, which delighted the Romans of classic times, still survives and surrounds the villa palaces on those ancient hills almost precisely as in the Augustan era; for the descriptions which Pliny has left of more than one of his villas evidently refer to features of precisely similar character to those which are found in the Roman palaces of the fifteenth, sixteenth, and seventeenth centuries. Among these, the Villa d'Este is one of the most extensive, and its situation (just below Tivoli) one of extraordinary beauty. In its palmy days its fountains, cascades, temples, grottoes, and statues, mingling with the groves and rocks, in the midst of which they had been distributed by the most skilful artists of the day, formed a veritable fairy-land; there is a tradition that Tasso took great delight in those scenes, they being his special resort in summer during his residence in Rome; and it is said it was there that he conceived and wrought out his exquisite description of the fairy palace and gardens of Armida. Time has, however, touched heavily with his defacing finger the stone terraces and marble fountains; but, seen from a certain distance, they still form a noble feature in the landscape. The horizonal lines of the terraces, balustraded in rich patterns, and surmounted with sculptured urns and statues, effect a crisp and finely artistic contrast to the irregularly undulating forms of the surrounding foliage; and these terraces, supported, as they are, by terminal turrets of graceful Palladian character and exquisite design, blend harmoniously with the landscape. It should also be remarked that these villa palaces of the Sabine hills are almost invariably prevented (either by accident or design) from appearing formal, or from producing the effect of hard, square masses in the general picture, by the frequent occurrence of large trees in accidental positions, among which the tufted heads of the Stone Pines form, at one or two points about the Villa d'Este, that singularly distinct effect in Italian landscapes which is the especial delight of the true artist. It was these mountain villas of the more distant suburbs of Rome which formed the first models of the Le Bruns and Le Pautres and other architectural garden makers of Central Europe, the Palace of Versailles and its gardens being almost entirely constructed and planted after the fashion of such works as the Villa d'Este. But the copying, though slavish, was not always successful; as, for instance, on the steep slopes of the hills of Tivoli the formation of those characteristic terraces was an absolute necessity, and there they consequently appear in harmony with the scene;



View in the Garden of the Villa d'Este.

but the piling up of artificial terraces on a dead level at Versailles and other places that might be named fail to convey to the eye the grandeur and beauty of their Roman models, and fully demonstrate the lamentable result of misapplied art. Such models as the Villa d'Este ought to suggest to the student of artistic gardening something far better than a mere adaptation and reproduction of individual features in their every detail, whether suitable to another site or not.

H. N. Humphries.

HOTHOUSE BUILDING.

This is a subject of no little interest to owners of gardens and others, and one with which they are perhaps not always familiar. Hothouse building is now an important branch of industry in this country, and the competition in that line is about as keen as it well can be, bringing with it the usual consequences—viz., cheapness, and sometimes a good and sometimes a bad article. Time was when glass houses for plant and fruit culture were confined to the gardens of the wealthiest only; but they are now common, and the demand has, as a matter of course, brought the professional horticultural builder into the market, and he has now all but monopolised the trade by driving what were called "home workmen," with their cumbrous notions and appliances, from the field, and placed hothouse architecture on something like a sound and scientific basis. There is certainly no objection to gentlemen employing their own men and materials in such work when they have men about them who understand it, but which is seldom the case. We have had considerable means of judging with regard to this matter, and we venture to assert that the most inelegant, the clumsiest, and the worst-adapted horticultural structures to be found are, with here and there an exception, those which are home-made. The only thing to be said in their favour is that they are generally made of the best materials, particularly as regards the timber used, and securely put together, whereas the horticultural builder, who works by contract, is apt to go to the other extreme. Nobody need, however, be greatly imposed upon, either in the one way or in the other, who knows clearly what he wants, and is determined to have the work done to his satisfaction, and at the same time is prepared to pay a reasonable price for a good article. Herein lies the whole gist of the matter. It is not high profits which pay the builder, but small profits, quick returns, and plenty of work. If the lowest estimate be insisted upon, the proprietor need not be surprised if second-class materials be used, or if his houses give way at the end of a few years—a thing which has happened more than once to our knowledge, even in cases where the top price has been given. We are acquainted with one establishment where a range of handsome-looking houses, which cost £6000, had to be taken down and re-erected within twenty years. In another place, part of the erections had to be taken to pieces and rebuilt seven years after they were put up, and it was stated that "not a single house in the whole range was likely to last twenty years." These and other instances of faulty construction we had from the proprietors themselves. No doubt the durability of such structures depends upon the care taken of them as regards painting, &c.; but in the cases referred to there had been no neglect in that way; the wood and workmanship were bad to begin with, and that was the only cause of failure. To those about to build, therefore, we offer the following practical suggestions, and it will be proper to begin first with

The Plan and Specifications.

Whether the structure be intended for the culture of fruits or flowers, get the advice of a practical horticulturist regarding its shape, size, and position; and having decided carefully on these points, and studied the situation as regards aspect, shelter, and drainage, have the plan and specifications prepared. Neglect no points if it be wished to avoid heartburnings over "extras" when the bill comes in, and which so often add to the total cost. Ascertain for certain how deep the excavations must be for the foundation, the height and thickness of the walls; decide how they are to be built and painted, and about the quality of the lime to be used. Stipulate that the woodwork is to be of the best red deal, thoroughly seasoned, the glass 21 oz. to the ft. at least, the ventilation to be ample—on the continuous shutter principle if practicable—and the gearing to be strong, serviceable, and effective. Stipulate, also, how much piping there is to be for heating purposes, and how it is to be arranged; that the pipes are to be straight and of good quality; and that the boiler is to be of sufficient power, not simply to heat so many feet of piping, as the maker puts it, but to heat the whole with ease up to a temperature of about 180° in the coldest weather. Lastly, provide that all the painting, from first to last, is to be done on the premises, and that the work is to be completed in a specified time, in a workmanlike manner, and to your satisfaction. The painting is particularly referred to because it is the almost universal custom to give the first coat at the works, and it is afterwards impossible to tell whether the wood is good or bad. When these salient points have been considered, the plan and specifications may be submitted to the builder, after he also has seen the site, and been fully informed on other matters with which he requires to be made acquainted. He will, no doubt, desire to carry out the work on his own system, and will probably have suggestions to offer, and perhaps alterations to propose, all of which it may be desirable to consider; but it should be a distinct condition that the plan in its essential points be strictly adhered to, and that any suggested alterations be approved by the original designer. As a rule, the prepared designs of most horticultural builders, as furnished in their catalogues, are excellent and well adapted for their purpose; but in most cases some special provisions have to be made, and the experienced gardener only is the proper person to consult in such matters. Having arranged everything satisfactorily, and settled the conditions of the contract fully and clearly, that there may be no misunderstandings afterwards, it remains only to see to the

Execution of the Work.

The time of the year to do this is of some importance. All excavating and rough work may be done during the winter months; but it is not wise to begin building brick or stone work while there is any danger of severe frosts, for nothing injures new masonry so much; and, as regards the woodwork and glazing, it cannot be done except in fine weather. For these reasons, all such work should be begun and finished between March and October, and the earlier in the season the better. As a rule horticultural builders prepare the whole of the woodwork before it leaves the works, and when it arrives at its destination, it has only to be put together and painted. At this stage, however, the whole affair may be mismanaged through the ignorance or carelessness of the subordinates entrusted to do the work, for neither the builder nor his agents—who have perhaps to superintend buildings all over the kingdom—can be present as often as required, and, with the best intentions of carrying out their contract faithfully, they are sometimes deceived. Supervision is therefore necessary on the proprietor's part, and the practice is customary. First, then, it should be seen that the wall plates, and any part of the woodwork which rests upon the masonry, are well painted on the under side, and if they can be laid on slate and bedded in white lead all the better. The common practice, unless otherwise specified, is to lay the wood in the mortar without paint or anything else, and the consequence is that it rots in a few years, owing to the damp absorbed from the wall, and the whole structure is then in danger. The next point is to see that all the joints, sockets, mortices, &c., are made to fit, that no room is left for water to lodge and cause decay, and above all that they are well fixed together with white lead, and that no cavities are left anywhere. These are points which are often neglected, and the result is that the framework comes to pieces in a few years. All the ironwork—and much is used now to give strength to structures in which the woodwork is necessarily reduced to a minimum—should be "wrought," and not "cast," whenever there is much strain upon it; but cast iron is sufficiently serviceable for many purposes, and being much cheaper may be used for upright supports and such like. Wherever bolts, screws, or screw-nails are employed as holdfasts, see that they are made secure, and that, to save screw-driver work, too thick a gimlet has not been used. We have seen the screw-nails so loosely put in in this way, that we could pull them out with the fingers, and they were supposed to hold the stays fast which held the roof together. Door posts should be stout, well set, and fitted with iron bolts at the bottom for letting into the thresholds. Before painting, fill up all holes with putty, and in painting see that the corners are not missed; apply at least four coats inside and outside, and let all be thoroughly dry and set before the house is used. As regards the heating, it is only necessary to see that the materials provided are according to the specifications, and that the pipes are well laid and jointed; but it is very important to see that the boiler is properly set, and that all the inner linings of brick are set in fire-clay. When finished, all should be tested before the fitter leaves the work.—"Field."

Protecting Vines in Cold Countries.—There is no safer method of protecting Vines in winter in cold countries than bending down the canes and covering them with earth. Before doing this they should be pruned, leaving one or two buds more upon each bearing cane than will be required for fruiting, as the terminal bud is more liable to injury in handling, either in layering or taking up in spring than the others, and if they go safely through, it is a very easy matter to rub off the surplus shoots when they appear. 3 in. or 4 in. in depth of earth is sufficient protection even in the coldest localities.—V.

SAXIFRAGA SARMENTOSA AS A BASKET PLANT.

This fine old plant, of which the annexed is a representation, was at one time only to be found in the cottage window. It is, however, very suitable for hanging baskets and other situations for which its pendent tresses render it valuable. It is particularly free-flowering, and the flowers, which are borne on large branching panicles, are light and graceful. Its leaves, which are dark green, are prettily mottled with white, and the plant sustains little or no injury from room cultivation. One peculiarity which increases its beauty, and which makes it so precious for hanging baskets is its long, reddish, thread-like runners, here and there furnished with little rosettes of leaves or plantlets. Although this Saxifrage is pretty hardy, and can accommodate itself to almost any circumstances, it succeeds best perhaps as a hanging plant. Some cultivators, according to the "Revue Horticole," take off the little plantlets, and

Saxifraga sarmentosa.

prick them out in well-drained 5-in. pots. The best soil for them is heath-mould, or if that be not available, a mixture of sandy soil and leaf-mould. Although plants of this Saxifrage are not readily affected by cold, they are all the better for being sheltered during the winter in cold frames, whence they should be taken and planted out in May. A border of light soil should be prepared, or, at any rate, the natural soil should be lightened by an admixture of rotten manure and decayed leaves, and the young plants should be pricked out at distances of 8 in. or 10 in. apart. The ground should be frequently watered during the summer, and care must also be taken to pinch off all runners which would, if allowed to grow, considerably weaken the young plants. They should be lifted and potted in September or early in October. Three plants may be put into each pot, and placed in a greenhouse or in a cold frame during the winter. The year following they will begin to flower. If a large number be grown, the time of flowering may be prolonged throughout the best part of the year, if the following method of culture be adopted. Towards the beginning of March, the plants which are intended for early flowering should be placed in a house, the temperature of which ought to range between 54° and 58° Fahr. They should be given as much air as possible, and in order to avoid etiolation, they should be placed near the glass. The pots should be set in elevated positions, in order that the runners may have a chance of hanging down, as shown in the accompanying woodcut. Grown in this way, the plants will begin to flower about the middle of April. Those which have been kept in cold frames need only be planted out in a northern aspect, and watered from time to time. These will flower from June to August. When they have acquired full development and have begun to flower, they are fit for room decoration even in situations in which there is a deficiency of light. They will flower without intermission, and throw down runners which will continue to grow until they are from 3 ft. to 4 ft. in length. Thus we have masses of delicate white flowers rising above the green and white foliage, and below a shower of red, silky-looking runners. Even after the flowers have ceased to appear this Saxifrage still retains its brightness as an ornamental-leaved plant, especially when combined with Statices, Gypsophilas, and other plants of a similar habit.

IVY HEDGES.

A correspondent of the "Journal of Horticulture" says that Ivy in some parts of Belgium is used for hedges, for forming divisional lines in nurseries and as boundary fences. It is thus employed because of its hardiness, its evergreen and ornamental character, and on account of the small space which the hedges occupy. More particularly he noticed the use of Ivy for the purpose named in Mr. Charles Van Geert's nursery at Calmpthout, a few miles distant from Antwerp. In this nursery there are many kinds of hedges, and amongst them hedges of Ivy. These are formed, in the first instance, of galvanized wire netting affixed to stout and durable supports. This forms the framework of the hedge. The Ivy speedily covers the wire, and a thin, dense, durable hedge is provided. Thus, without the aid of walls, many of the ornamental Ivies may be cultivated in a manner not only attractive, but useful, hedges formed in this way being firm and substantial. In the same way Ivy may be trained to cover summer-houses, an example of which may be found in Mr. Van Geert's nursery at Antwerp. A skeleton framework — either octagonal or hexagonal — had been formed of wire netting, over which the Ivy had been led, and produced a cool, agreeable shelter. This is an inexpensive structure, yet lasting and appropriate to many grounds and gardens. It is noticeable that where the wire had been covered with mats—ordinary Russian garden garden mats—previously to planting the Ivy, that the latter grew more satisfactorily, forming a quicker and better screen than when the wire alone constituted the surface for the Ivy to cling to. These mats appear to be particularly suitable for the support of Ivy, the shoots clinging to them with great tenacity—in fact, as Mr. Van Geert observed, "eating them," so that in a very few years not a vestige of the mats is to be found. That, however, is due to the desiccating influence of the weather as much as to the feeding power of the plant. After "eating" through the mats the Ivy becomes affixed in the wires, and is not displaced by wind, and the walls are permanent and evergreen. The Ivy only requires clipping occasionally to keep it "snug," and then no one can tell, without a close examination, that it is not growing on stone or brick walls. The adaptability of Ivy for these modes of shelter and ornamentation renders these examples worthy of being recorded.

BRITISH HEATHS.

When roaming over a Highland corrie, or marking the sunlight fall on the granite blocks of Dartmoor, all but swallowed as they are in summer by the purple ocean of Heather that surges in upon their desolation, the traveller is apt to forget that there are more than one species of Heather in the kingdom. There are seven (or, omitting Calluna, six) even in England, while the whole family boasts some 400 species, to say nothing of the innumerable hybrids and varieties which our gardens produce. Every one knows the common Ling or Heather (Calluna), which is the most widely distributed of the family, ranging, as it does from Labrador to the Azores, and spreading all along the western coast of Europe from the Atlantic-washed side of Africa, which is the original home of the race. The Scotch Heather proper (Erica cinerea) is somewhat thicker and taller than this last, with reddish-purple flowers which delight bees,

while its tender shoots are dear to the grouse and blackcock. The Cross-leaved Heath (E. tetralix) once seen is never forgotten. Fairies might have modelled it in wax, as, rising 4 in. or 5 in. from the ground, it hangs its delicately-tinted, rose-flushed flowers over some boggy spot where the Cotton Grass flutters in the wind. Whoever has penetrated to the angry coast of the Lizard, either to see its curious churches or to gather its characteristic plants, must have recognized the Cornish Heath (E. vagans) as soon as he sets foot upon the magnesian limestone, while the ciliated Heath occurs in isolated spots in the Cornish peninsula, and Mackay's and the Mediterranean Heath are only to be found in the south-western districts of Ireland, being in truth outlyers from the flora of the Spanish peninsula on the Continent. The autumnal holiday-maker never fails to greet the Heath as the symbol of all that is free and pleasurable in outdoor life, while to the inmates of the Scotch shieling Heather stands in much the same relation for its economic uses as does the Bamboo to the Gond or Malay. Even the gipsies have reason to bless the Heather, as it helps them to a livelihood by making brooms, if only they can obtain or take right of common where it grows. And to many a mountain child the purple hillside is the only flower garden he knows; but what a garden! reaching from horizon to horizon, itself the best of bedding plants, requiring no care or expenditure, the greener after the worst of storms, when August's sun blazes most fiercely only more purple and luxuriant, the home of all that is elevated and purifying in heart and taste. For "it is not the written poetry which affects us most, but the unwritten poetry of our own youth, and mine is all bound up with Heather, and Ferns, and streams flowing under the shade of Alders." Not only are there many different species of Heather, but, despite the apparent uniformity of the common kinds when covering a moorland, the keen eye may discover differences in the texture and colour of the flowery carpet, which the dull wight, his vision unpurged by euphrasy and rue, thoughtlessly misses. Mark this grey scaur falling 80 ft. from the pure blue skies overhead into the blackest pool of the Tummel, but fringed above with the deepest of purple Heather, which lovingly runs as far down its face as the longest spray can find foothold. Who has ever yet seen Heather adequately painted? Miss Mutrie at present, Van Huysum in old days, would exactly limn a sprig of it; but it is a very different thing to cope with a whole surface of glowing Heather with all its reflected lights, manifold depths, and fainter shadows, and trembling twinklings of rose-red passing into the grand sunlight fulness of purple perfection. From this living sheet of amethyst turn we the mental kaleidoscope to South Devon, where the Heather-clad hills rise, say, from the Otter Valley towards the west. The prospect has lost the prevailing charm of purple monotone, but it has gained in richness as compensation. Yellow Bog Asphodel spikes and creamy-white Bedstraw, pink, white, and blue Milkwort, Foxgloves, and Mullein with woolly leaves and yellow flowers, and many more contrasts of colour, like Proserpine's stores hurriedly emptied upon Etna, crowd every square yard of the stony moorland, while dwarf Furze, ablaze with living gold, throws into prominence the red breadths of Heather. Flora's richest gifts in July cover these bare hillsides, topped here and there with dark Pines, while blinding gleams of blue sea to the left and in front enhance the effect. It is very beautiful in its own way, but the soberness of northern Heather is lost in the general glow. This might be a Lotus-eater's paradise; here there is room for imagination, for peaceful rest from work, and golden dreams. Hant's Heather, again, as seen on the North Downs, is uniformly of a soberer tint than that of either Devon or Scotland. There is little admixture of other flowers, nothing to serve as foil to its amethystine glow. It is different with Lincolnshire, where scanty patches of the plant occasionally linger, pleasing oases to the artistic eye among the vast desert of skilled farming, the formal acres of Turnips and Mangolds threatening ere long to swallow up these purple outlyers, which, indeed, are at present only permitted to exist on sufferance. The very rarity of these scattered banks of Heather renders them precious. The beholder blesses them (if he be not an agriculturist) on account of their associations. In Yorkshire the moors, with their Heathery covering, are the next best thing to Scotland—are Scotland, in short, without its romance.—"Cornhill."

Capsicums in the Sun.—Mr. G. W. Wells has growing at his place, near Tampa, in Florida, a Cayenne Pepper bush 10 ft. high and 40 ft. in circumference.

Curious if True.—In a garden at Billancourt may be seen at the present time an Apple tree loaded with fruit. There is nothing extraordinary in this, but the stock of the tree is Cherry, on which has been grafted the Apple, a kind of Golden Pippin. The fruit precisely resembles Cherries, the same stem, the same size, the same form, and nearly the same colour; but its taste is that of an Apple, and it contains pips instead of stones. Specimens of this Apple were submitted the other day to our inspection. It must be a real curiosity, for it is generally thought impossible to graft a pip-bearing fruit on the stock of a tree-bearing stone fruit.—"Independance Belge."

PLATE L.

THE SHRUBBY ECHIUMS.

(WITH A COLOURED FIGURE OF E. FASTUOSUM).

The genus Echium is a worthy representative of an Order which is remarkable for the prevalence of blue in the flowers of the plants which it comprises. If we glance through the various cultivated Boraginaceæ we shall at once be struck with the prominence of the colour named when we note the genera Borago, Anchusa, Myosotis, Omphalodes, and others which are of less importance to the cultivator than these, and the Echiums may well be added to the list. Few among our wild flowers are more strikingly handsome than the Viper's Bugloss (Echium vulgare), which has ere now found a place in the garden to which its brilliant hue fairly entitles it; and the shrubby species of the genus which we are about to consider are well worthy the attention of the cultivator. Shrubby plants are not common among the true Boraginaceæ, and those of the present genus are natives either of the Canary Islands or of the Cape. They require greenhouse treatment, growing well in a mixture of loam, peat, and sand. Cuttings of them will doubtless strike root in the same kind of soil under a hand-glass, but they are more readily increased by layering down the young shoots, making a small incision with a knife on the back of each shoot so laid before pegging it down; or they may be raised from seeds, which are sometimes produced in this country. They average in height from 2 ft. to 5 ft., some being larger; E. giganteum, for example, attains a height of from 6 ft. to 10 ft. One of the Cape species (E. lævigatum) was in cultivation in this country as long ago as 1774, having been introduced by Francis Masson, to whom we owe also the introduction of several Canarian species. The best of these shrubby Echiums are the following:—

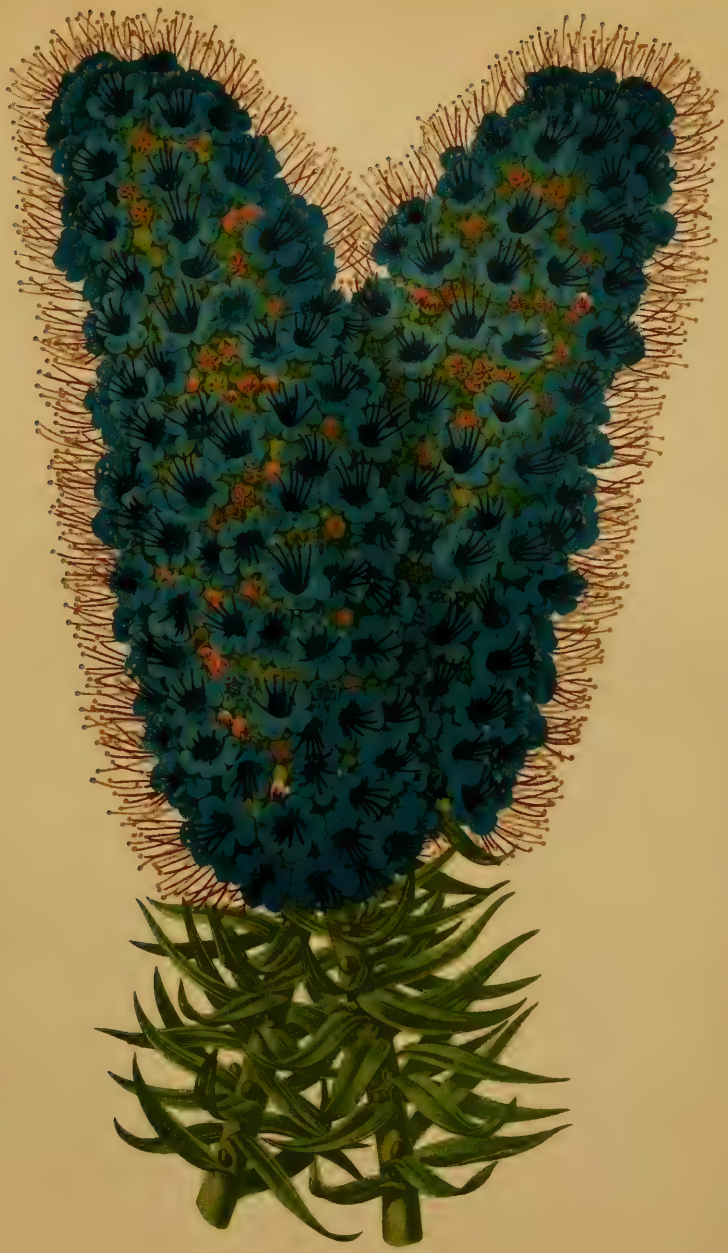
Echium fastuosum.—This, which flowers freely in Southern Europe, and of which our plate furnishes an illustration, is the handsomest, though not the largest, of the shrubby Echiums, its flowers being of a peculiarly brilliant though deep blue, which is not in any way exaggerated in our representation. It forms a shrub from 2 ft. to 4 ft. high, having long pale green leaves, which are covered with soft white hairs, and a branched stem, which is surrounded by a large, dense panicle of deep blue flowers. It has been known in cultivation since 1779, but, like its congeners, has never obtained the attention to which its beauty certainly entitles it.

E. giganteum.—We have here, as the name implies, the largest member of the genus. It is a striking and very handsome plant, growing from 6 ft. to 10 ft. high, with a branched stem, smooth, hoary branches, and large, thyrsoid panicles of white flowers, all pointing in one direction, which become purplish as they fade. The leaves are bright green, short and narrow, from 3 in. to 5 in. in length, clasping the stem at the base. Like the preceding, this species was brought into cultivation in 1779, having been discovered by Francis Masson during the botanical exploration of the Canaries, Madeira, and the Azores, with which he was occupied from 1776 to 1781, and which resulted in the addition to our gardens of many new and interesting plants. The younger Linnæus, in the "Supplementum," states that he was indebted to Masson for all the Canarian plants described in that work, of which this Echium is one.

E. candicans.—This is another very excellent species introduced by Masson; it is a native of Madeira, and is notable for its generally hoary appearance throughout, which is owing to both leaves and stem being covered with silvery white hairs. The flowers are comparatively small; they are blue striped with white, or white throughout. The species forms a handsome shrub, and is not unfrequent in French houses.

E. simplex.—This is by no means a common though a distinct species, native of Teneriffe, and which made its first appearance in our gardens about 1820. It is a comparatively low-growing species, not exceeding 3 ft. in height, and usually less. It is a biennial species, with large silky leaves, and a very long cylindrical panicle of white flowers, which is produced in the second year of the plant's existence.

There are several other Canarian species of Echium, while others of similar habit are natives of the Cape of Good Hope. Of these E. grandiflorum (E. formosum), with red flowers; E. fruticosum, with purple blossoms; and E. argenteum, which is whitish throughout with silky hairs, are the best. J. B.



THE GIANT VIPER'S BUGLOSS (ECHIUM FASTUOSUM

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. DENNING.

December 11.—*Sowing*—500 pots of Mignonette and keeping them slightly warm in pits, so as to have them ready in time for the London season. *Potting*—Hoietas and Laburnums for forcing; also Ashtop Potatoes, and placing them in first Peach-house; shifting and re-potting Odontoglossums into Moss, peat, sand, and horse manure; also some Sweet Briers into larger pots. *Planting*—Tritoma Uvaria and Phloxes, more Hyacinths, Narcissi, and double scarlet Anemones; also standard Roses where required, and a hedge of Berberis asiatica; likewise Cypripedium pubescens under hand-glass out-of-doors in well-drained peat, and covering with a layer of leaves as a protection from frost. *Miscellaneous*—Putting into Vinery Black Prince Strawberries to force; also Heliotropes in slight heat, more than 60° spoiling the scent; began painting and tying Vines in second Vinery; only syringing Vines where "broken" once a day now, except over pipes, and there three times still, putting a little heat on constantly even if it rise in the evenings to 65° and remains so all night; watering Rose-pit border; finishing cleaning orchard-house, giving water before manuring, and again after, then soiling over all, and treading firmly; making a border ready for Parsley sowing; manuring young Apple trees; top-dressing Disa with peat intermixed with cow manure; cleaning Pelargoniums under greenhouse stage; pruning espalier Apple and Pear trees, and re-tying them; clearing Endive of dead leaves; late Cucumber plants beginning to set and swell fruit; pot Vines showing fruit; scarlet Van Thol Tulip and Sericographis Ghiesbreghtiana in flower.

Dec. 12.—*Potting* and dividing Pleiones. *Miscellaneous*—Putting in to force third batch of Asparagus; pruning Peach trees in second house; stopping the first Vine shoots; beginning to thin plantations, paying especial attention to specimen trees; raising temperature of first Peach-house to 55° at night and 60° by day fire-heat, blossom-buds showing colour. *Plants in flower*—Hyacinths, Lily of the Valley, Narcissi, Mignonette, Heliotropes, Scented-leaved and Scarlet Pelargoniums, Poinsettias, Fuchsias, Primulas, Chrysanthemums, Schizostylis coccinea, Amaryllises, Tulips, and Coleus.

Dec. 13.—Digging all vacant spaces; finishing the trenching of borders for fruit trees; putting into Peach-house first batch of Roses. *Miscellaneous*—Putting Endive weekly into slight heat to blanch; placing below greenhouse stage all bulbs which have finished flowering in order to save them for planting out-of-doors for cut flowers; getting Fig trees tied ready for starting; covering up some Rhubarb in the open ground; giving a good watering to pot Vines, pot Peaches, and first Hamburgh Vines; making a two-light bed for Carrots and Radishes; putting a good layer of new soil over the manure in second Peach-house; putting Ranunculuses in pots into cold frames.

Dec. 14.—*Potting*—Young Cucumbers and putting them into a small frame. *Miscellaneous*—Keeping Black Prince Strawberries at from 55° to 58° by night so as to have them ripe about the 13th of March; putting Iresine Lindeni into stove on flue for cuttings; moving Coleus from pits to shelf of first Vinery; taking up Lettuces from under wall and putting them in frame; placing Dendrobiums of the densiflorum and Farmeri type in sunny positions in Cattleya-house; putting all Mossiæ section of Cattleyas on sunny side and all long-bulbed section on shady side of Cattleya-house; tying up Vines which were bent down in order to induce the rods to "break" regularly; beginning to saturate Disas daily.

Dec. 15.—*Potting*—Pleiones; putting P. Wallichi and humilis into hanging pans; fifty Tuberoses, and placing them in pot Vine pit; putting Gloire de Dijon and Maréchal Niel Roses into good-sized pots for flowering in conservatory. *Planting*—Laurels and Yew trees; putting Endive into boxes and placing them in Seakale-house to blanch. *Miscellaneous*—Re-arranging all Orchid-houses; getting Camellias into conservatory; putting a great many Roman Hyacinths into greenhouse, in order to keep them back; watering second Hamburgh-house border after top-dressing it; top-dressing Cucumber plants with loam and manure, and beating or pressing it down firmly; Camellias and Narcissi coming well into flower, also a few pots of Lily of the Valley.

Dec. 16.—Beginning to surface-dig herbaceous borders. *Potting* Pelargoniums; putting first batch of Roses into heat, and keeping them at 55° at night; getting main crop of Strawberry plants into Strawberry house. *Miscellaneous*—Tying up first pot Vines, nearly all buds burst, some shoots nearly in flower, temperature 65° at night, 70° during the day; protecting Peas from sparrows by means of Asparagus haulm, which not only serves to ward off frost, but lies so lightly that the young Pea shoots grow right through it; making trenches round Wellingtonias in parks, and filling them with good soil; giving a top-dressing of new soil to Vine border; wheeling pond-mud on to Raspberry quarter; raising temperature of Peach-house to 55° at night, and 60° during the day, fire-heat.

Herbaceous and Shrubbery Borders.

Although these have already lost much of their attractive character, they are not altogether devoid of interest, as the winter Aconite, Sternbergia lutea, and the Christmas Rose are already beginning to unfold their welcome blossoms. Were the latter but tender and required stove-heat, how much more it would be thought of and sought after, but as it is only a common hardy border plant of easy cultivation, its exquisite form and beauty do not appear to have gained for it half the notice which its merits deserve. If planted in well-prepared soil in clumps of three or more, so as to be covered with a hand-light, their flowers expand more readily, and come with greater purity of colour than when left exposed to the weather, or they may taken up and potted for embellishing the greenhouse or window recesses in sitting-rooms, for either of which purposes they are most valuable. Where cut blooms are in great request during the winter months, what can be better or more lasting than the Christmas Rose? But to have it in quantity for this purpose it should be grown in specially prepared beds of suitable sizes, to be covered with any old spare sashes, or an ordinary garden frame. The larger variety (Helleborus niger maximus) is by far the best, as it affords the finest flowers, and produces them in great abundance, particularly after the plants have become thoroughly established, which they soon do in properly prepared soil. Nothing appears to suit them better than peat or leaf-mould, and in forming the beds a liberal dressing of one or the other, or both, should be worked in to a depth of at least 18 in., as the roots go far down in search of moisture and food, in order to build up the flowers they produce so freely and continuously for several months in succession when grown under favourable conditions. The transplanting and division may take place at any time during the winter or early spring months, but these operations should be done between March and June, as then the roots are getting into a state of activity, and the plants start away at once, and quickly recover from the effects of any mutilation they may have received in making the division. In planting isolated specimens or groups in the herbaceous or shrubbery border, large holes should be dug, and plenty of peat or leaf-soil worked in in the same manner as recommended above, after which the plants should not be disturbed. The practice of digging herbaceous or shrubbery borders is a great mistake, and should only be attempted when the state of the soil has become too close and solid, or when it is desired to reduce the size of many of the plants, and re-arrange them so as to give them fresh positions. This occasionally becomes necessary on account of the gross-feeding habit of some of the varieties, and of the rapid rate at which they increase in size when growing in deep, rich soil, such as should always be prepared for herbaceous borders. In cases where it is not desirable to disturb the plants for the above purpose, they should now be examined, and have any dead or decaying tops removed, and the surface of the ground mulched with very short, mild manure, or a mixture of that and some light vegetable soil, such as leaf-mould, which, if put on at once, will afford shelter and protection to the many choice and interesting plants such borders ought to contain. It often happens, in putting this department of the garden in order at this season, that a general clearance of the stems of all plants is effected without any regard being paid to the condition they are in, but this practice has a most injurious effect, for as long as there is the least vitality in the tops and leaves, they have not ceased performing their natural functions in developing fresh crowns for a future floral display. Any vacant spaces that may occur in either shrubbery or herbaceous borders should at once be filled in with such plants as Wallflowers, Sweet Williams, Stocks, Forget-me-nots, &c., that have been grown and properly prepared for the purpose in the reserve garden. These, if lifted with good balls of earth adhering, may be transferred without the least check if mild, open weather be chosen for the purpose; and if to these be added as many Snowdrops, Daffodils, Crocuses, Scillas, Dog's-tooth Violets, and other early spring-blooming plants, a very pleasing effect may be produced. By planting largely of these as well as Primroses, Cowslips, Foxgloves, &c., the shrubbery border may be made exceedingly attractive, and if not too full of tree roots or overhanging branches, such subjects as the above will be quite at home, and keep on improving from year to year. In planting any of these the ground should be well broken up where the bulbs or plants are to be placed, and towards the bottom of the hole some manure worked in. This will give them a fair start and enable them to become thoroughly established, after which they will take care of themselves if not allowed to become overgrown with coarse weeds. It should be borne in mind that, owing to the late growth

most plants have made this autumn, they are in an unusually tender condition, and but little prepared to endure a hard winter, and, therefore, protecting material should be got ready that it may be immediately applied should its use be required. There is nothing that keeps out frost better than what Nature provides for the purpose—fresh fallen leaves; and if these be packed round the collar of any plant and kept in position by a little Bracken and a few sprays of evergreen, it is impossible for the plants to receive any harm. Choice Hollyhocks and Pentstemons that it is desired to save should now be taken up and potted or laid in where they can have the protection of an old spare light and a mat to cover them during severe weather, but at all other times, except when raining, they should have full exposure. Carnations and Auriculas, too, require plenty of fresh air, which should be afforded them by keeping the lights constantly tilted and the plants well up to the glass. If plunged in some dry, non-conducting material, such as Cocoa-nut fibre, the roots will be maintained in a regular, uniform state, and quite unaffected by any change that may take place through the occurrence of frost.

Flower Garden.

Where walks, Grass verges, or any portions of the lawn are in a defective state, the present is a good time to set about getting them in proper order. In the case of walks the principal way to ensure them being sound, dry, and solid, is to have a sufficient number of gratings connected with suitable drains to carry off the surface-water, for when this is allowed to soak into the foundations through the gravel, as is frequently the case, it is impossible to have them in sound condition. With plenty of gratings it passes rapidly away, and with a dry bottom thus secured, and frequent use of the roller after heavy rains, or when the surface has been disturbed by frost, walks may be kept in a fit state to be used in all weathers. As to lawns, Grass verges, &c., any small irregularity in the surface of these may readily be got rid of by forcing them out with a heavy rammer and roller if brought into use immediately after heavy rains, while the turf is in a soft, spongy condition. Hollows or depressions can only be taken out by removing the turf and raising the ground to the proper level, but in all cases where it is necessary to do this the soil used should be of a poor, sandy character, or the Grass at each particular spot so operated on will grow stronger than the rest, and give the lawn a patchy appearance. It often occurs where turf has been subjected to close mowing for a long period that Moss or noxious weeds take possession of the soil; and if either of these be allowed to remain undisturbed, they soon usurp the place of the natural Grasses by the rapid way in which they spread. The best way to eradicate the weeds is to spud them out, or let a drop of vitriolic acid fall into the crown of each from a small stick used for the purpose, the effect of which will be to burn them so far down their stems as to cause their destruction. If Moss put in an appearance, it results from either poverty or insufficient drainage, but is more generally produced from the former cause, and when that is the case the remedy is simple and of easy application. In cases, however, where it exists to any great extent, the first proceeding towards getting rid of it should be by a free use of an iron rake to scarify the surface and uproot as much as possible, after which the lawn should be swept over with a stubby Birch broom, and the Moss so collected carted away. This done, a heavy dressing of fresh slaked lime, put on during a dry time, will burn up the rest, when, with proper assistance and attention afterwards, the fine Grasses will soon take its place. After the Moss is fairly destroyed, the surface of the lawn should have some fine mould in which soot, guano, and nitrate of soda are mixed in small quantities, the effect of which will be almost magical when the growing season commences. Wood-ashes in connection with the above are also a powerful fertilizer, and from the potash they contain, very inimical to the growth of Moss. In bad cases, before the above is put on, it will be advisable to sow a few fine lawn Grass seeds, and to run a light roller over them to press them gently in, after which the slight top-dressing recommended above will afford a sufficient covering for them. This, with a free use of good, stiff brooms and plenty of rolling, will soon bring about a rich velvety surface, which is always such a distinguishing feature of a well-managed lawn. The constant cutting to which these are subjected without any return being made for what is carried away, naturally has a very exhausting effect on the Grass plants, many of which die, and at once leave room for a lower order of vegetable life that quickly succeeds them, and smothers those that are left. Where walks or beds are bounded by Box or other live edgings that have become gappy or irregular, they should at once be filled up or relaid, as nothing is a greater eyesore in a garden than to have these in a faulty condition. Box frequently becomes shabby, stunted, and discoloured, from an insufficiency of calcareous matter in the soil, or from being continually relaid in the same without any change being made. When it assumes a rusty brown appearance, it is a sure sign that the soil is unsuitable, and when this is the case, an exchange should be made by taking some from the beds or borders, and replacing it with that in which the Box was previously growing. Indeed, a change of this kind is always beneficial, and may readily be made whenever the beds or borders are dug without involving much time or labour. In the absence of calcareous matter in the soil, fine chalk should be liberally added and mixed up with it, which will impart to the Box that deep green colour so desirable in an edging plant. The present mild, damp weather is exceedingly favourable for transplanting all kinds of deciduous trees and shrubs, and where desirable, even well-rooted evergreens may be removed with safety, although it is best to wait till April before doing this, now that the season is so far advanced; but, if carried out at this time, it should be pushed on with all despatch before an unfavourable change takes place. A good mulching of littery matter, to lie around their stems as far as the roots extend, should not be forgotten, as that is one of the principal aids to success in transplanting all kinds of trees and shrubs, many of which will not survive the piercing frosts and searching winds of winter without it. Where an increase of evergreens is desired for furnishing beds in winter or for other purposes, it may readily be effected by means of layers, that can be made from any of the lower branches, which, if carefully treated now, will be ready for removal a year hence. All the Hollies, Magnolias, Aucubas, Rhododendrons, and indeed, nearly all plants submit to this method of propagation, although some are longer in growing roots than others—Rhododendrons, for instance, which are two years before their roots are formed; on layering the branches, the soil should be removed to a depth of 4 in. or 5 in., and each layer pegged down in position, when the soil should again be returned to bury the stems. It is advisable to layer on the shady sides of plants, as there the soil retains its moisture longer after being watered than where more fully exposed.—J. Sheppard, *Woolverstone Park.*

Orchids.

Any spare time that may occur throughout the winter may be devoted to making baskets and preparing blocks and rafts in order that they may get well seasoned, and be ready for use when wanted in the spring. If a good number of baskets be available when the general shifting of the plants takes place, the cultivator will be able to use his own discretion whether a plant shall be potted or put into a basket. That almost all epiphytal Orchids are safer and more easily cultivated in baskets than in pots is well known, but flower-pots being always ready are frequently on that account used, and that often against the better judgment of the cultivator. Orchid baskets may be made of almost any kind of wood except that of Conifers, and even that may be used for strong-growing plants, such as Aerides odoratum, Vanda suavis, &c. The best and easiest made baskets are those that are square in shape. The rods should be sorted into sizes, and cut into suitable lengths—the smallest for the smallest baskets, and the largest for the largest ones. After they have been cut into lengths the ends should be cut smooth, and holes bored in each rod at from ½ in. to 1 in. of each end. Four pieces of wire should then be cut, one for each corner of the basket; they should then be put through the holes in the rods until the basket is high enough, when the wires should be turned over at the top to keep all firm, and (if the baskets be intended for suspending) other wires should then be fastened to the loops thus made in order to form the handles by which they may be hung. The whole operation is so simple that with a day's practice it can be managed even by a boy. Copper wire is the best to use, but galvanized iron wire is a useful and good substitute. Baskets may be made of cork, which will be found very ornamental, but there is one thing to be said against them, and that is, they are apt to harbour insects. The wood of all kinds of fruit trees is useful for Orchid blocks if cut into suitable pieces; at this season wood of this description cannot well be got in London, but in many country places it is often obtainable in quantity. Acacia, Maple, and any other durable wood is also suitable for Orchid blocks, and should be procured whenever they can be obtained. Orchid growers should always be on the look-out for material wherewith to construct baskets and blocks, and should have them made in leisure time so as to be ready for use when required.—James O'Brien.

Hardy Fruits.

If asked to name the greatest hindrance, or what caused the most labour and anxiety, in connection with hardy fruit culture, doubtless the great majority of horticulturists would unhesitatingly answer—vermin, by which is meant insects, such as green and black fly, scale, thrips, red spider, &c. Well, knowing this, and doing battle with the pests year after year, why is it that more pains are not taken to prevent their attacks? That prevention, to a very large extent, is possible has been repeatedly proved, and in my own experi-

ence I have more than satisfied myself that the winter dressing of fruit trees with any insect-destroying liquid saves much valuable time and anxiety in the spring and summer months, simply for the reason that insects do not put in an appearance in such numbers, while their attacks are not nearly so serious, and they can soon be exterminated. If any one be sceptical on the matter, he should dress with an insecticide one-half of his Peach trees or Morello Cherries, and leave the other half untouched. After the first experiment he would ever afterwards adopt winter dressing. To paint over as I recommend all the branches of a tree may seem a tedious operation, yet it is not so when taking into account the labour involved in the attempt to get rid of insects in the growing season by washing, syringing, smoking, &c., day after day, with very frequently but indifferent results. Trees that have been badly infested with any kinds of insects during the past summer should now be pruned, and then painted over with Gishurst as per directions, or with a home-made composition consisting of soft soap, sulphur, soot, and lime, made to the consistency of paint by adding clay or cow manure, which also insures adhesiveness. Provided the trees have not been badly affected, a good syringing with soapsuds, applied by means of the garden engine to insure its reaching every crevice in the walls, will be all the dressing they require. It is a good plan to wash all the walls after this fashion, whether the trees have been blighted or not, for soapy water is a sure preventive to the spread of all kinds of insects. There having been so much rain that the ground is sodden with moisture, planting or work of any kind requiring trampling on the ground should be avoided till it becomes drier. Fortunately in a garden, if one class of work cannot be conveniently accomplished at the proper time, there are always others waiting to be done, so that with good management this work need not get behindhand, even though some cannot be performed exactly at the right time. Fruit trees grown in the orchard, for instance, which are usually planted on Grass, can have their wants attended to, notwithstanding the wet state of the ground. More often than not it happens that these have to go without any kind of pruning or trimming whatever, but at least the effort should be made to cut out the dead wood and thin out the branches till each branch left stands clear of its neighbour. Clear the stems of Moss and Lichen by scraping, sprinkling the whole with fresh slaked lime. When the weather is calm and moist of course such an operation is impracticable with very large trees, but even if the stems of these were washed over with lime and soot it would kill Lichen and prevent the spread of insects. When the ground is hard through frost, lose no opportunity of wheeling manure on to all the fruit quarters or trees requiring the same, grubbing old trees, stake cutting for supports or training, label making, collecting and burning prunings, besides sundry other necessary work that will at the time suggest itself, and will save much valuable time at a busier period.—W. Wildsmith, *Heckfield.*

Trees and Shrubs.

This is the best season for felling timber of all kinds, for if cut during the months of November, December, or January, it is more durable than when cut earlier or later in the season, the reason being that the sap is at rest, thus rendering the timber in a better condition for seasoning to resist decay. The saw is now generally used in preference to the axe for felling timber, except, perhaps, in cases where it is necessary to have the stools grubbed out in pleasure grounds or other ornamental woods, where the stools would be an eyesore, or interfere with the planting of ornamental trees and shrubs. In the case of cutting poles and saplings, or thinning young plantations, of course the axe must be used. Underwood cutting should now be pushed on, in order that purchasers may be allowed as long a time as possible to get the wood worked up and cleared out of the copse before the stools begin to grow, for if left in the copse after the young growth has commenced, great damage may be done by the hauliers allowing their horses to browse on the young shoots; the latter are also easily damaged and broken off by the wheels of carts or waggons coming in contact with the stools. On some estates it is the practice to sell the underwood standing; it is, however, the best and most satisfactory way to have it cut by the owner's or vendor's own workmen, and sold in drift afterwards. Copses cut last season or woods in which timber has been thinned should now be gone over and put into good order; all blanks ought to be planted up, ditches and trenches scoured out and new ones made wherever stagnant water exists; Ivy should be cut off trees and its roots grubbed out; ruts in rides, or roads occasioned by haulage should be levelled and made sound and firm, and hedges, banks, gates, and stiles should be made secure against the inroads of cattle. Water-courses and culverts will require opening out now that the fall of the leaf is over. Forest planting should also receive attention; the past three months have been exceptionally favourable for evergreen tree and shrub planting, particularly on light sandy ground, as the late wet weather has been beneficial to the plants; on the other hand, on clay lands the transplanting of trees and shrubs could not be proceeded with satisfactorily. Dig holes for forest tree planting, and prepare for spring planting of ornamental shrubs by turning the ground deeply and well mixing and stirring the soil. Lift plants in the nursery for forest planting, fill up vacant quarters with young plants, make and plant cuttings of trees and shrubs, prune young hardwood trees, and foreshorten contending leaders on Conifers and other ornamental trees.—G. B., *Longleat.*

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Pruning Fruit Trees.—It is always advisable to get the pruning of all fruit trees, except Peaches, Nectarines, and Apricots, completed as soon after the leaves are off as possible. When pruning is finished before the close of the year, time is given for the performance of other operations as they become due. Pruning at this season is certainly cold work, but it is much more so when deferred until winter is far advanced, when there may be frost and snow, and when the work cannot be done so well as when it is carried out with comfort to the operator. Those who have not had much practice in pruning are very liable to either overdo or underdo it. In the case of bush or pyramidal Apples and Pears grown on borders of limited-sized gardens, it is generally deemed advisable to confine them to a small or medium size, and in order to accomplish this, they are often so severely cut as to defeat the object in view, especially when the trees are young and disposed to make strong growth. In order to check too great a luxuriance of growth, those trees that are in the condition just mentioned and that were root-pruned, as recommended, about the end of the summer, should not be more closely pruned than will be effected by a slight shortening of the strong shoots requisite for the necessary furnishing of the tree, while those shoots that tend to overcrowd and are in the worst position should be entirely removed. Thus treated, it will be found that the root-pruning, if sufficiently and judiciously carried out, will have the effect of reducing the next summer's production of wood to not more than one-fifth of what it has previously been, in place of which the energies of the trees will be directed to the formation of quantities of fruit-bearing spurs on the shoots that have been made this and the preceding season, whereas if too much of the young wood be cut away, the full effects to be derived from the root-pruning will be rendered nugatory. Pears on the Quince stock do not make so much wood, and consequently do not require so much pruning, either roots or branches, as those grown on Pear stocks, but the fruit of many varieties is frequently not so good in quality, particularly such kinds as are at all disposed to be gritty. Apples, also, on Paradise stocks, will not need pruning nearly so much as when grafted on the Crab. I mention this merely for the guidance of those who are inexperienced, and who frequently cut away at every tree upon which they operate without discrimination, as if the impression existed that the fruit-bearing capabilities of a tree depended upon pruning alone, whereas pruning is only one of the means employed to induce fertility, and requires to be varied in extent according to the state of each individual tree. It is simply useless attempting to get fruit from a young tree that produces quantities of young wood, by persistently cutting out the shoots at the winter pruning, the effect of which is to cause similar growth the following season. In the case of large standard trees do not over-prune; on the contrary, only just thin out the weak, inner branches, so as to admit a reasonable amount of light, and allow space sufficient to prevent one branch coming in contact with the other during high winds, and thus knock off the fruit. It is no unusual occurrence for an inexperienced pruner to use the saw so freely in the case of standard trees as seriously to reduce their bearing capabilities. In small gardens where trees of good varieties of Apples exist that are too large for the places which they occupy, or when they unduly shade the vegetable crops that have to be grown near them, rather than remove them altogether, it is frequently more desirable to head them down to within 2 ft. or 3 ft. of the ground. Soon afterwards they form moderate-sized, fruitful heads, certainly not so trim in appearance as those of young dwarf trees, but very often of much more service in filling the fruit-room. Plums and Cherries, unless in damp, over-rich soil, are not usually disposed to make such rank, unfruitful growth, as Pears and Apples; they therefore simply need their shoots regulated by cutting back any that take an undue lead and thinning out all that are not wanted to form symmetrical heads. With young Pears on walls there is frequently too much haste displayed in covering the space allotted to them, by laying in the shoots indiscriminately their whole length, instead of shortening such as require it to furnish a sufficient number to cover

the wall evenly; the result of this is a waste of space and an unsightly appearance ever afterwards, with the generally additional disadvantage that a considerable portion of the base of the trees contain no bearing wood at all. In the case of young trees of this description any shoots that show a decided tendency to outgrow the rest should be cut sufficiently close to induce them to break back where additional growths are required to cover the wall; this will tend to equalize the strength by throwing more vigour into the weaker shoots. The same holds good with Cherries and Plums on walls.

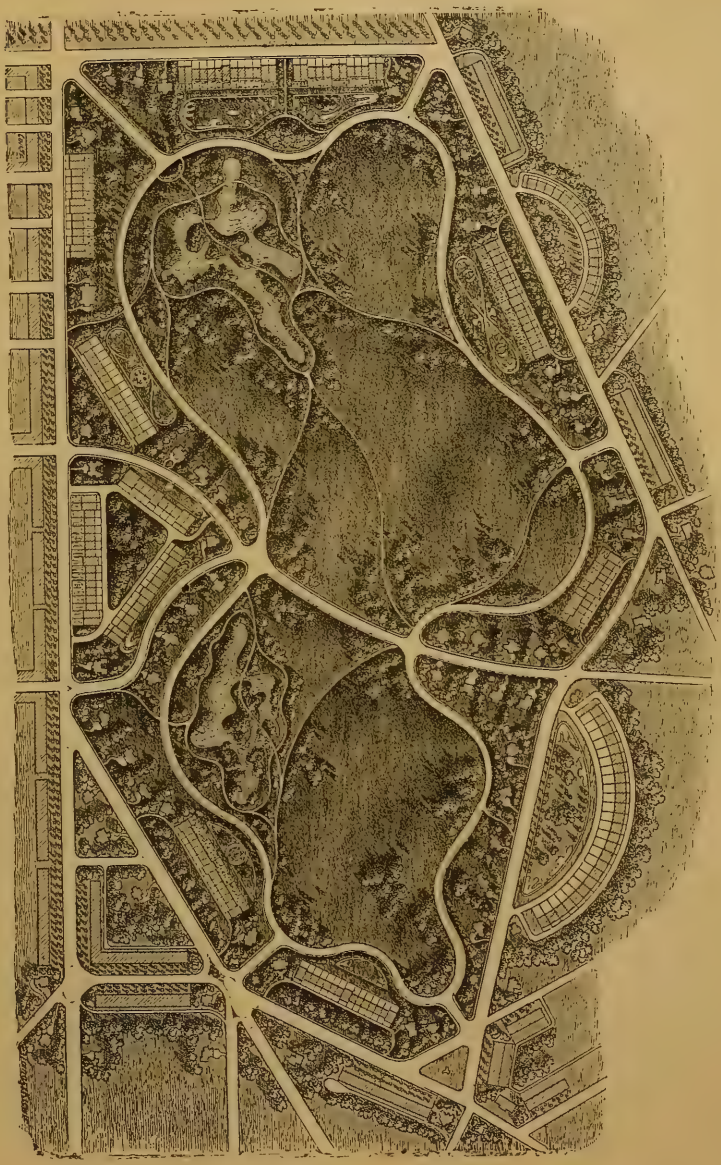
Pruning Bush Fruits.—In respect to Gooseberries and Currants, advice is often given not to prune them until the winter is far advanced, so that if birds attack the buds, the pruning can be afterwards so regulated as to leave the shoots on which the buds are least destroyed. A little reflection will show this to be a mistake, as in localities where sparrows and finches abound, if the trees be left to themselves, they frequently clear off the whole of the buds, and even where a portion is left it is often on such shoots as are misplaced, and which, to preserve a shapely bush, have to be cut out. Besides, in advocating such a course of treatment the fact is lost sight of, that when buds are stripped off, especially in the case of Currants, it is not the ensuing year's crop alone that is destroyed, but also the spurs that should push for a number of years. It is much better to prune these fruits at once, and, where necessary, to take such means as will deter the birds from attacking the buds or render the latter distasteful to them. In pruning young Gooseberries, little more requires to be done than cutting out the superabundant shoots, leaving those that are best placed to form the future bushes, so as to give them a shapely appearance. In the case of such as have attained sufficient size, a portion of the old wood should be cut out each year, bearing young shoots to take its place, and selecting, as far as possible, those that spring from near the base, so as to keep the bushes furnished properly down to the bottom. Never leave the centres of the bushes crowded, or the fruit will be deficient in both size and flavour, and avoid, however, the extreme of reducing the bushes to mere skeletons in the way practised by those who grow this fruit for exhibition, where everything is sacrificed in the production of a very limited quantity of large-sized berries. Red and White Currants only need the branches to be reduced so as to leave sufficient space without crowding. Immediately the pruning is completed, a few white threads should be run loosely over the bushes in the usual way. These, while they retain their fresh colour, will generally be found effective in scaring sparrows, but not finches; to preserve the buds from being eaten by the latter, mix lime and soot in equal quantities with water, as thick as it will pass through a syringe with a coarse rose; or it may be sprinkled on with an ordinary hand-brush. A fine sunny day, when there is enough wind to dry the mixture on thoroughly before night, should be chosen for the operation, and if that be done it will stick for a good portion of the winter in quantity sufficient to make the buds unpalatable to these feathered depredators; a second dressing of the mixture should be given after the first has become inefficient; but whether the thread or the soot and lime be used, the bushes should be looked over at intervals to see that the means employed are effectual, as there is nothing more annoying than to find the season's crop destroyed, as well as injury inflicted for a longer period. Black Currants require much less wood being cut out of them than the Red and White kinds; all that is required is to thin out the growths so as to prevent their getting too close, and in the case of old trees to cut a few of the branches out near the bottom each year, which will induce them to push up young shoots that will keep the bushes renewed, and to shorten the whole so as keep them within bounds as to size. Raspberries may also be pruned at any time after the leaves are off; the number of shoots that should be retained to each stool will depend upon the age and strength of the plants, say from one or two to such as have only been a year planted, and six or eight to those that have got to full maturity, and that are strong; the length at which the shoots should be left will also depend on their strength and the method upon which they are grown; the old-fashioned practice of tying half the shoots from one stool to an equal number of another in the form of an arch with a stake driven into the ground where the bent shoots meet to which they can be fastened, has its advantages in the bearing shoots trained in this way not interfering in any way with, or being shaded by, the young growth, but grown in this way they have not such an orderly look as when the shoots are tied to wires stretched from end to end of the rows; under the latter method the shoots should not be left so long, as from their being in an upright position the lowest eyes do not usually break so well. In very many gardens there are portions of low wall unsuited for growing such fruits as require considerable space; these usually have Currants planted and trained over them; it is much better to cover part of such walls with Gooseberries, as they give variety, and in such a position they will keep for weeks when ripe, as here they are little exposed to wet and can be easily protected from birds with nets. On east or even north walls Gooseberries, as a rule, will bear well, whereas on these aspects the space is often under ordinary circumstances lost under the impression that nothing will succeed.

BIRKENHEAD PARK.

This park is one of those happy combinations in which while a portion of the surrounding land has been devoted to blocks of buildings and villa sites, the large central part has been appropriated to the purposes of a public park. Besides the external somewhat rectangular roads, there is a well-made carriage-drive, which, by means of a series of easy and graceful curves, forms a sort of irregular and pleasing outline to that portion devoted wholly to park purposes. As to the park itself I may state that my first visit to it was made soon after its formation some twenty-five or twenty-six years ago. It had then a special interest, being the pioneer, as it were, of the importation of the garden element into park scenery, a style with which, in the present day, visitors to our London parks, with their sub-tropical gardens, are familiar. To my mind there appeared to be in this park a long step in advance from what we may term the Loudonian age, which might be characterized as presenting combinations of foliage and tree development dealt with on flat surfaces. Here we had superadded artificial variations of surface combined with the same materials, and so happily were they blended that even in that early stage of development it was difficult to say where art ceased and where Nature herself took its place. Lights and shades, contrasts and harmonies, are the materials with which the landscape artist has to deal. In Birkenhead Park, as has been stated, we had the dawn of a new era in park decoration. It is true the portion thus dealt with was limited, and my impression was that it was in too great a measure isolated from the general park design, *i.e.*, there was a want of continuity and gradation of design, whereby the broad expanse of park, which may be looked upon as Nature's share in the matter, failed in its harmonious blending with the park properly so called. This park is, at least, free from the disfigurement of a stiff diagonal line, which is one of the most faulty features of Battersea Park. There is at Birkenhead both grace and fitness in the lines, and where in certain parts artificial plantations have been formed, they have been carried out with taste and judgment; but the park portion is deficient in massive groups, which give boldness by broad contrasts, and enable the artist to avail himself of those varying tints and equally varying habits of growth, which the hundreds of forms of arborescent vegetation place at his command. Bareness and "dottiness" (if I may coin a term) were in this case admirably expressive of the effect conveyed to the mind, and these characters were all the more intensified by contrast with the manipulatory skill and ability shown in the more select portion of the park to which we have already alluded. Though some of the objectionable matters to which we have referred have been modified by alterations which have since been made, and also by the growth of the trees and shrubs, still our strictures are not inapplicable to the park as it now stands. Nevertheless, to Mr. Kemp—by whom this park was laid out—is due the initiative of a new era as regards public park design, and although Birkenhead fails in the one important point to which we have alluded, it will stand as a lasting memorial of his good taste in dealing with the garden portion, including the water lines and arrangements, which are all that could be desired. J. C. Niven.

Botanic Garden, Hull.

Moss on Lawns.—Will any reader of The Garden tell me how to remove Moss from my lawn? It has destroyed nearly all the other turf plants.—H.—[It is better not disturbed till early spring. It must be torn from the ground with a long-toothed rake; and this should be done twice, allowing an interval of a week to elapse between the rakings. In the early part of March the ground should be dressed with good loam, with about a sixth part of lime added. It should be fine, so as to save the trouble of stone-picking, and then sow with a mixture of fine lawn grasses.—T.]



PLAN OF BIRKENHEAD PARK.

SHAKESPEARE AS A GARDENER.*

In searching among my papers some time ago, I turned up the leaf of an old book—evidently a commentary on Shakespeare. On perusing it, I was much surprised to find these words: "Shakespeare seems to have had little knowledge of gardening," a statement which induced me to turn over in my mind several passages from his works which seemed to speak most learnedly on the subject, and I came to this conclusion, that the commentator could have had but little knowledge of gardening himself or he never could have hazarded such an assertion, because any person who has perused the works of the great dramatist must surely have noticed the frequent and varied allusions made by him to rural scenes and country life under every phase and aspect that the mind could suggest. There is an oft-quoted sentence "familiar in our mouths as household words," with which we have frequently met, and which runs thus: "He was not for an age, but for all time," a sentence especially applicable to this master mind, and I trust I may be excused for lamely attempting to paraphrase it by saying he not only understood one trade, but all trades, an assertion for the confirmation of which we have only to turn to his pages. Who besides Shakespeare, may I ask, has ever so eloquently discoursed—and not only eloquently, but practically? In every grade of every day life his knowledge of such subjects was indeed wonderful; he seemed to be acquainted with every description of handicraft, and he was no sophist, but a profound reasoner. If his subject required depth of thought, do we not find his matter well digested? No lawyer better understood the quips and cranks of law—no divine could preach a better sermon—no lover of Nature could look upon Nature with more loving eye, or paint such exquisite pictures without one tint of colour; and with this knowledge coming nearer home to us, no gardener could broadly tell us much more of his profession, or put together a neater or more compact bouquet of flowers, or arrange a more suitable garland. It is true, garlands are not now fashionable, but in Shakespeare's day they held high place in floral decorations. Here is a garland for old men, which we find in "A Winter's Tale," act iv., scene 3; Perdita, one of the *dramatis personæ*, representing the mistress at a sheep-shearing festival, in receiving Polixenes and other guests, thus addresses them:—

Reverend sirs,
For you there's Rosemary and Rue; these keep
Seeming, and savour, all the winter long.

Polixenes replies:—

Well you fit our ages
With flowers of winter.

Also in the same scene we find a fitting garland for mid-age, thus:—

Here's flowers for you;
Hot Lavender, Mints, Savoury, Marjoram;
The Marigold, that goes to bed with the sun,
And with him rises weeping. These are flowers
Of middle summer, and, I think, they are given
To men of middle age.

Some few passages further on and we meet with a spring bouquet, and to this I beg special attention. Perdita, still welcoming the guests, addresses the younger portion:—

I would I had some flowers o' the spring that might
Become your time of day;
. . . . . .
Daffodils,
That come before the swallow dares, and take
The winds of March with beauty; Violets dim,
But sweeter than the lids of Juno's eyes
Or Cytherea's breath; pale Primroses,
That die unmarried ere they can behold
Bright Phœbus in his strength, a malady
Most incident to maids; bold Oxlips and
The Crown Imperial; Lilies of all kinds,
The Flower-de-Luce being one.

This is indeed a bouquet, culled with exquisite skill. In its construction we find combinations of perfect elegance, purity, and truth—truth, inasmuch as we find here those flowers only which are found in bloom at the same time. Some poets, even those who stand well in the world's esteem, have, in the exuberance of their fancy, placed in juxtaposition not only spring blooms, but also those of summer and autumn. Thus we find that Shakespeare was a close observer. Truth was the basis of his observations, and truth shines out brightly in every page of his works. He could indeed

Find tongues in trees, books in the running stream;
Sermons in stones, and good in every thing.

And we should reverence and admire

All the matter that he teacheth.

* Read before the Westerham Gardeners' and Amateurs' Mutual Improvement Society.

If Shakespeare were not a gardener he must have been an enthusiastic amateur, or he never could have penned the exquisite descriptions of Nature with which we meet in several of his plays. Who can read them without admiring the exquisite word painting and common sense with which they abound. His country life and rural scenes stand before the mind's eye so vividly depicted that we not only seem to see but to hear—

The cuckoo's note; or the lark's high carol
To the rising sun.

In the play of "As You Like it," especially, many of these beautiful scenes are well depicted. Again, what a wonderful description of the hunt is to be found in the "Midsummer Night's Dream;" and in "Much Ado About Nothing," we find him discoursing about fishing. In other of his works we find allusions to farming, seed-time, and harvest. The embryo poet must, indeed, have revelled in the green-wood shades and daisied meads which surrounded his paternal home. In his early life his associations with them are often alluded to—how the impressions then formed matured with his age, "grew with his growth, and strengthened with his strength;" and though for some few years he assisted his father in his business as a woolstapler, and at the age of eighteen became a denizen of our great metropolis, yet his horticultural knowledge was too deeply impressed ever to be effaced; and how aptly did he apply it, when necessary, to the varied similes which are so often met with in the dialogue of the characters represented in his plays. Here is an admirable illustration in the third scene of the first act of "Othello," Roderigo tells Iago he cannot control his love for Desdemona, and the latter replies—

'Tis in ourselves that we are thus, or thus;
Our bodies are gardens, to the which our wills are gardeners,
So that if we plant Nettles, or sow Lettuce,
Set Hyssop, and weed up Thyme,
Supply it with one garden of herbs, or distract it with many;
Either to have it sterile with idleness, or manured with industry.
Why, the power and corrigible authority of this lies in our wills.
. . . But we have reason to
Cool our raging motions, our carnal stings, our unbitted lusts;
Whereof I take this, that you call love, to be a scion.

Having given a brief allusion to the garden, it will naturally follow that I should allude to other matters in connection therewith; and, firstly, it will not be out of place to give a few extracts about weeds, of which Shakespeare must have had a great horror, as all lovers of good gardening should have. In "King Henry VI.," part 2, act iii., first scene, Queen Margaret says—

Now, 'tis the spring, and weeds are shallow-rooted;
Suffer them now, and they'll o'ergrow the garden,
And choke the herbs for want of husbandry.

In the first act of "Hamlet," and the second scene, Hamlet thus expresses himself—

O fie! 'tis an unweeded garden,
That grows to seed; things rank and gross in nature
Possess it merely.

In "King Richard III.," act ii., scene 4, the Duke of York addresses his grandmother thus—

Grandam, one night, as we did sit at supper,
My uncle Rivers talk'd how I did grow
More than my brother; "Ay," quoth my uncle Glo'ster,
"Small herbs have grace, great weeds do-grow apace;"
And since, methinks, I would not grow so fast,
Because sweet flowers are slow, and weeds make haste.

In "As You Like It," act ii., scene 7, Jaques, addressing the Duke, says—

You weed your better judgments
Of all opinion that grows rank in them.

In "Troilus and Cressida," act i., scene 3, Ulysses addresses Nestor—

The seeded pride,
That hath to this maturity blown up
In rank Achilles, must or now be cropp'd,
Or, shedding, breed a nursery of like evil.

In "Macbeth," act iv., scene 3, Macduff, speaking of the evil wrought by Macbeth, exclaims—

This avarice
Sticks deeper; grows with more pernicious root
Than summer-seeding lust.

In "King Henry VIII.," act v., scene 1, Gardiner, Bishop of Winchester, in speaking with Sir Thomas Lovell against Cranmer, Archbishop of Canterbury, anathematizes thus—

He's a rank weed, Sir Thomas,
And we must root him out.

In "Antony and Cleopatra," act i., scene 2, Antony addresses a messenger who brings him intelligence of the advance of the Parthian army :—

Taunt my faults
With such full licence as both truth and malice
Have power to utter. O, then we bring forth weeds
When our quick winds lie still.

In "King Lear," act iv., scene 4, Cordelia alludes to her father thus :—

He was met e'en now
Crown'd with rank Fumiter, and Furrow Weeds,
With Harlocks, Hemlock, Nettles, Cuckoo-flowers,
Darnel, and all the idle weeds that grow.

Quotations on this subject might be multiplied, but sufficient have been given to prove the hypothesis that Shakespeare must have been an enthusiastic amateur gardener, a devoted horticulturist, one who knew the evils of an unweeded garden, and the labour entailed to keep it free from such evils. And now to some notice of other garden matters. Here is one not altogether inappropriate to the present season; it is from "King Henry IV.," part 2, act iv., scene 4. Prince Humphrey says :—

The seasons change their manners, as the year
Had found some months asleep, and leap'd them over.

And again, in the "Midsummer Night's Dream," act ii., scene 2, Titania, in addressing Oberon, thus speaks :—

The spring, the summer,
The chiding autumn, angry winter, change
Their wonted liveries; and the mazéd world
By their increase now knows not which is which.

Here is an allusion to garden destroyers in "King Henry VI.," part 2, act iii., scene 1, the Duke of York says :—

Thus are my blossoms blasted in the bud,
And caterpillars eat my leaves away.

Frequent allusion to frost is met with, but one or two extracts on this subject will be enough. In "Love's Labour Lost," act i., scene 1, we find the king speaking to one of his courtiers thus :—

Like an envious, sneaping frost
That bites the first-born infants of the spring.

In the "Midsummer Night's Dream," act ii., scene 2, Titania says :—

We see
The seasons alter; hoary-headed frosts
Fall in the fresh lap of the crimson Rose.

In "King Henry IV.," part 2, act i., scene 3, Lord Bardolph, expressing some doubts as to the success of the enterprise in which he is engaged, unless all things are well prepared, says :—

As in an early spring
We see the appearing buds, which to prove fruit
Hope gives not so much warrant, as despair
That frosts will bite them.

In "King Henry VIII.," act iii., scene 2, Wolsey soliloquises thus :—

This is the state of man: To-day he puts forth
The tender leaves of hope, to-morrow blossoms,
And bears his blushing honours thick upon him;
The third day comes a frost, a killing frost,
And—when he thinks, good, easy man, full surely
His greatness is a ripening—nips his root,
And then he falls.

In the "Merchant of Venice," act iv., scene 1, Antonio tells us :—

The weakest fruit
Drops earliest to the ground.

Let us now pass on to fertilizing and grafting subjects, on which we have the following in act iv., scene 3, of "The Winter's Tale," where Perdita speaks to Polixenes thus :—

The fairest flowers o' the season
Are our Carnations and streak'd Gillyvors,
Which some call Nature's Bastards; of that kind
Our rustic garden's barren, and I care not
To get slips of them.
Polixenes. Wherefore, gentle maiden,
Do you neglect them?
Perdita. For I have heard it said
There is an art which, in their piedness, shares
With great creating Nature.
Polixenes. Say, there be;
Yet Nature is made better by no mean,
But Nature makes that mean; so over art,
Which, you say, adds to Nature, is an art
That Nature makes, you see, sweet maid, we wed,
A gentler scion to the wildest stock;
And make conceive a bark of baser kind
By bud of nobler race. This is an art
Which does mend Nature—change it rather—but
The art itself is Nature.
Perdita. So it is.
Polixenes. Then make your garden rich in Gillyvors,
And do not call them Bastards.
Perdita. I'll not put
The dibble in earth to set one slip of them.

In "All's Well that Ends Well," act i., scene 2, the King of France, speaking of Count Roussillon's father, eulogizes him by saying :—

His plausive words
He scatter'd not in ears, but grafted them
To grow there, and to bear.

In "Coriolanus," act ii., scene 1, Menenius, in welcoming Volumnia and her friends, bids them

A hundred thousand welcomes,

and wishes

A curse begin at every root of his heart
That is not glad to see them!
. . . . . Yet by the faith of men
We have some old Crab-trees here at home
That will not be grafted to your relish.

In "King Henry V.," act iii., scene 5, the Dauphin exclaims :—

O Dieu vivant! shall a few sprays of us—
The emptying of our fathers' luxury—
Our scions, put in wild and savage stock,
Spirt up so suddenly into the clouds
And overlook their grafters?

In the first scene of the third act of "King Edward VI." (Part 2) Lord Suffolk sneers at the Earl of Warwick in this vein :

If ever lady wronged her lord so much,
Thy mother took into her blameful bed
Some stern, untutored churl; and noble stock
Was graft with Crab-tree slip—whose fruit thou art.

In the third act of "As You Like It," and in the second scene Rosalind enters reading a paper with some rhymes, which Touchstone, a jester, overhears and criticises, when the following dialogue ensues :—

Touchstone. Why do you infest yourself with them?
Rosalind. I found them on a tree.
Touchstone. Truly, the tree yields bad fruit.
Rosalind. I'll graft it with you, and then I will graft it with a Medlar; then it will be the earliest fruit in the country, for you will be rotten ere you be half ripe.

In "Richard III.," act iii., scene 7, the Duke of Buckingham urges Glo'ster to assume power on the plea that—

This noble isle doth want her proper limbs;

And speaks disparagingly of the young princes as thus :

Royal stock graft with ignoble plants.

I could scarcely think it possible that Shakespeare should have written so freely and so tersely on such matters as I have quoted unless his mind had been fully developed by having been engaged in such occupations; mere book learning (and I much question if elaborate works on gardening were then in existence) could not have implanted sufficient practical knowledge for his enlightenment; he always speaks with the confidence and boldness of an expert; and, further, he must have had true delight in all things connected with a garden, or he would not so frequently have introduced among his other matters under so many forms and guises some gardening phrase to illustrate his text. In "Troilus and Cressida," act i., scene 3, for instance, there is a passage that no superficial knowledge could have suggested, *i.e.*,

As knots, by the conflux of meeting sap,
Infest the sound Pine, and divert his grain
Tortive and errant from his course of growth.

Practical gardeners know well that on old trees we not unfrequently find some twisted branch or ugly knots—some of these the result of improper pruning. Such malformations, impeding to a certain extent the flow of the sap, consequently exert an injurious effect upon the health of the tree, its growth, and the quality of the fruit. With one more illustration, a kind of brief commentary on the ordinary work of the garden, I must conclude. In this scene we have a gardener and his assistants, who are here termed servants, not under-gardeners—I presume there was no such term at the period when Shakespeare wrote. The scene I select is from "King Richard II.," act iii., scene 4, and is laid in the Duke of York's garden at Langley, Bucks. The Queen and two ladies of the Court are strolling in the garden and overhear this conversation :—

Gardener. Go, bind thou up yon dangling Apricocks,
Which, like unruly children, make their sire
Stoop with oppression of their prodigal weight;
Give some supportance to the bending twigs.
Go thou, and, like an executioner,
Cut off the heads of too-fast-growing sprays,
That look too lofty in our commonwealth;
All must be even in our government.
You thus employed, I will go root away
The noisome weeds, that without profit suck
The soils, fertility from wholesome flowers.
1st Servant. Why should we, in the compass of a pale,
Keep law, and form, and due proportion,
Showing, as in a model, our firm estate,
When our sea-wall'd garden, the whole land,
Is full of weeds, her fairest flowers chok'd up,
Her fruit trees all unpruned, her hedges ruin'd,
Her knots disorder'd, and her wholesome herbs
Swarming with caterpillars?
Gardener. Hold thy peace!—
He that hath suffer'd this disorder'd spring,
Hath now himself met with the fall of leaf;
The weeds that his broad-spreading leaves did shelter,
That seem'd in eating him to hold him up,
Are pluck'd up, root and all, by Bolingbroke;
I mean the Earl of Wiltshire, Bushy, Green.
1st Servant. What, are they dead?
Gardener. They are; and Bolingbroke
Hath seized the wasteful King.—Oh! what pity is it
That he hath not so trimm'd and dress'd his land
As we this garden! we at time of year
Do wound the bark, the skin of our fruit trees,
Lest, being over-proud with sap and blood,
With too much riches it confound itself;
Had he done so to great and growing men,
They might have lived to bear, and he to taste
Their fruits of duty. All superfluous branches
We lop away, that bearing boughs may live;
Had he done so, himself had borne the crown
Which waste of idle hours hath quite thrown down.
1st Servant. What, think you, then, the King shall be depos'd?
Gardener. Depress'd he is already; and depos'd,
Sir, doubt he will be; letters came last night
To a dear friend of the good Duke of York's
That tell black tidings.

The Queen, having overheard this conversation, comes forward and speaks:—

Thou, old Adam's likeness,
Set to dress this garden, how dares
Thy harsh, rude tongue sound this unpleasing news?
What Eve, what serpent, hath suggested thee
To make a second fall of curséd men?

The Gardener excuses himself on the plea that everybody knows what he has been speaking about. The Queen addresses the ladies, and then turns upon the gardener with this curse:—

Gardener, for telling me these news of woe
I would the plants thou graftest may never grow.

The Gardener, as all gardeners are gentle-men, receives the rebuke in a very gentle spirit, and soliloquises thus:—

Poor Queen! so that thy state may be no worse,
I would my skill were subject to thy curse—
Here did she fall a tear; here in this place
I'll set a bank of Rue, sour herb of grace;
Rue, even for ruth, here shortly shall be seen,
In the remembrance of a weeping Queen.

From what has been stated it will be seen, I think, that Shakespeare was not only an amateur gardener, but that he possessed a sound horticultural knowledge. J. H. Jewell.

The Elder Tree in Scotland.—At a recent meeting of the Edinburgh Botanical Society, Mr. Hutchison, of Callowrie, described a common Elder Tree (Sambucus nigra) growing on the north-eastern slope of the Ochil Hills, at an altitude of about 1000 ft. The tree was cut down in November, 1873, and measured 30 ft. in height, with a finely-balanced rounded head, and a straight bole of about 12 ft. Its girth at 1 ft. and 5 ft. from the ground was 3 ft. 2 in., and 2 ft. 10½ in. respectively; the annular rings numbered forty-two, showing that it was planted in 1831. The soil is a good medium loam upon clay and rock, and both clay and soil are very wet.

The Cherry Plum as a Fence Plant.—For quickly repairing old fences or making new ones, Messrs. Ewing ("The Florist" tells us) strongly recommend the Myrobella, or Cherry Plum (Prunus Myrobalani), which, they say, "grows rapidly on the poorest soils, where the Whitethorn does not succeed, produces long, sharp thorns or spines, bears clipping well, and soon forms thick, stout branches, making the hedge as strong as a wall, and when of sufficient height, such as will turn either man or cattle. It is highly ornamental, being the earliest of all spring-flowering trees, especially when allowed to grow without clipping."

YUCCA FILIFERA IN FLOWER.

This Yucca has flowered in the garden of the Baron de Prailly at Costobelle, near Hyères. It is said to be the same as Y. canaliculata; the seed was sold by Messrs. Vilmorin about 1860, and two plants raised from it were obtained from M. Haber, of Hyères, in the year 1867. In the flowering stage, as will be seen by the annexed illustration, it is an effective object. The Yucca sold as Y. albo-spica is stated to be the

Yucca filifera.

same as Y. filifera. Our illustration is purchased from the proprietors of the "Revue Horticole."

THE SPECIES OF YUCCA.

The following synopsis of the species of Yucca, drawn up from two papers by Dr. Engelmann in the "Transactions of the Academy of St. Louis," may be of interest to the growers of these handsome plants:—

Yucca.

A.—Sarcoyucca.—Fruit fleshy, indehiscent.
1. aloifolia (syns. — serrulata, crenulata, arcuata, tenuifolia, Parmentieri?)
   β. draconis.
   γ. conspicua.
2. Yucatana.
3. Guatemalensis.
4. Treculiana (syns.—longifolia, canaliculata, aspera, gigantea).
5. baccata (syn.—crassifolia).
   β. australis.
6. Schottii (syns.—brevifolia (Schott), pubernla).
   (Of doubtful position: glauca, exigua, orchioides.)

B.—Clistoyucca.—Fruit dry, indehiscent.
7. brevifolia (syn.—draconis β, var. arborescens).
8. gloriosa (syns.—acuminata, obliqua).
   β. plicata.
   γ. recurvifolia (syns.—recurva, pendula, superba? rufo-cincta?).

Sub-varieties : *a.* ensifolia.
b. Ellacombii.
δ. planifolia (syn.—glauca ?).
(Of doubtful position : flexilis tortulata, Boerhavii, pruinosa, De Smetiana.)

C.—Chœnoyucca.—Fruit dry, dehiscent.

9. rupicola (syns.—tortifolia, lutescens).
β. tortifolia (syns.—tortilis, contorta).
γ. rigida.
10. angustifolia.
β. elata (syns.—angustifolia var. radiosa, constricta).
γ. mollis (syns.—stricta, albo-spica).
(Of doubtful position, but probably to be referred here; periculosa, polyphylla, circinata, scabrifolia, and filifera.
11. filamentosa : *a.* angusta (syn.—filamentosa, *Lin.*).
b. lata (syn.—concava).
β. flaccida (syns.—puberula, glauca, lævigata).
γ. bracteata ?

D.—Hesperoyucca.—Filaments acute, longer than the pistil, erect.

12. Whipplei.

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—H. N. Ellacombe, in "Gardeners' Chronicle."

Hardy Climbers for Basket Handles.—Why does not "B." (see p. 519) use the Golden and Silver Variegated Ivies for his basket handles instead of the dark green-leaved kinds, which he finds too heavy. Scarcely any other hardy climber is so well suited for such a purpose as Ivy, for it is evergreen, permanent, and will bear any amount of trimming; showy handles would detract from the gay colours of the flowers massed in the baskets. A margin of Ivy and the handle covered with the same material, whether green or variegated, greatly improve the appearance of iron wire baskets. Some baskets should be dressed with Green, some with Golden, and some with Silver-leaved Ivies, and the floral fittings should be such as would harmonise with these colours. Petunias, Verbenas, Phlox Drummondi, and similar plants are exactly suited for baskets.—A. D.

STRAWBERRY GARIBALDI *v.* VICOMTESSE HERICART DE THURY.

As considerable discussion has taken place of late in reference to the Garibaldi Strawberry, I will try, if possible, to clear up the doubtful points respecting it. Many years ago the late Mr. Nicholson, of Eaglescliffe, near Yarm in Yorkshire, raised a seedling Strawberry, to which he gave the name of Garibaldi. I had plants of it from him, which I cultivated for several years in France, but finally the kind was discarded as not being quite up to the mark, a point on which my late friend fully agreed with me. However, Garibaldi having in the meantime been distributed in England, I presume that by inadvertence or neglect it has in some places become mixed with Vicomtesse Héricart de Thury, and thus the latter found its way into gardens, where it has ever since been grown under the name of Garibaldi. I do not know whether or not Mrs. Nicholson has still Garibaldi as raised by her late husband but if so, it may be got at Eaglescliffe true to name, and thus everybody will be convinced that there is a great difference between Garibaldi and the Vicomtesse. As regards autumnal crops of Strawberries, in addition to Alpines, I very often have had them, but never in sufficient quantity to warrant the belief that one may depend upon them. Besides Vicomtesse Héricart de Thury, I have had last autumn ripe fruit of good size of the following kinds, viz., Fairy Queen, La Constante, Sir Harry, and Dr. Roden's Excelsior. Ferdinand Gloede.

Hamburgh.

—— I had a Strawberry from the Lawson's Company, in Edinburgh, under the name of Garibaldi, but it was quite a distinct variety from the Vicomtesse Héricart de Thury, which I also grow. Garibaldi has a large dark coloured fruit is not particularly well-flavoured, and is but a shy bearer. Héricart de Thury, on the contrary, is certainly one of the most valuable Strawberries grown, both for early forcing and for its bearing qualities in the open air. I had two beds of it this year with two rows in each bed, and the quantity of fruit gathered from them, both for dessert and for preserving, was something wonderful. With President, Rivers's Eliza, and Garibaldi no grower of Strawberries need fear a want of abundant crops.—William Tillery, *Welbeck.*

—— In reply to Mr. Bennett, I have a strong impression that the above Strawberry was raised and distributed by the late Mr. W. J. Nicholson, of Eaglescliffe, Yarm, Yorkshire, and if so, it is scarcely probable, however much it may resemble Vicomtesse Héricart de Thury, that it can be the same variety. I know Mr. Nicholson to have been too honest a man to connive at that or any other deception. His widow, I imagine, would still be found at the above address, and would most probably know if Garibaldi were one of her late husband's seedlings.—W. R., *Morningside, Kidderminster.*

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

December 6.

This meeting was a very interesting one, and it is encouraging to hear that these fortnightly gatherings are to be continued as heretofore during the ensuing year. It is to be hoped, too, that horticulturists and amateurs will assist the Society by contributing plants, fruits, and cut flowers, as opportunities may occur. Amongst subjects shown on this occasion the most novel and interesting was a series of Japanese educational books, amply illustrated by means of wood engravings, from which a good idea of the contents of each work could be obtained, even by those who could not read the letterpress. This collection was contributed by Mr. H. N. Moseley, naturalist to the Challenger Expedition, and consisted of miniature gardening in porcelain vases, rice culture, silk manufacture, and botany, the engravings in some cases being extremely well executed. A letter was read relating to the occurrence of a poisonous Mushroom on Mushroom beds, which had been watered with a solution of ammonia in warm water. This species, called Agaricus fastualis, resembles the common edible Mushroom very closely, the most evident distinction being the absence of the ring or annulus on the stem. Mushroom growers must, therefore, carefully examine their beds, in order to see that the produce is good and wholesome. With reference to the Japanese Kaki fruits (Diospyros) exhibited by Mr. G. F. Wilson at the previous meeting, it was pointed out that these fruits were uneatable in a fresh state, as they contained about 2½ per cent. of tannic acid and but a small proportion of sugar. If laid in a warm dry place, however, the fruits bletted, and after fermentation had developed the saccharine matter were much more palatable. The American Diospyros virginiana or common Persimmon also possesses this acerbent astringency, and is not eaten until after a frost or two has induced bletting, and consequently increased the amount of sugar. A cut spike of the showy scarlet-bracted Billbergia was sent by Mr. Wheble. Col. Trevor Clarke remarked that the American Bromeliads were remarkably easy to cultivate, and much more hardy than is generally supposed, some species having endured an average English winter in his garden at Welton, near Daventry, while the majority of kinds grow and flower well in a warm greenhouse temperature, all the nutriment they require being amply provided by a handful of Moss being placed around their roots in small 60-sized flower pots.

First-class Certificates.—These were awarded to the following novelties :—

Oncidium Londesboroughianum (Denning).—This is a very beautiful Mexican Oncid, which has been some years in cultivation, but which does not appear to have been flowered or exhibited before. The pale green, glossy pseudo-bulbs are ovate and somewhat flattened or two-edged, and are borne upon a creeping rhizome. The bulbs are apparently one-leaved, and the younger ones are sheathed at the base with the membraneous remains of the radical leaves. The plant exhibited had a drooping, simple spike nearly a yard in length, bearing about a dozen flowers and buds. The sepals and petals are ¾ in. in length, with crisped margins, the colour being a greenish-yellow spotted with chocolate-brown. The lip is over 1 in. broad, kidney-shaped, and of a clear bright yellow colour. Mr. Denning informs us that the plant is deciduous in habit, and grows well along with Zygopetalums, Lycastes and Cypripedium insigne; apart, therefore, from its beauty, which is of the O. Rogersi and O. Marshallianum order, it has the merit of being easily grown.

Grape, Clive House Seedling (Bell).—This is a large-berried black Grape of the Black Morocco type, having large oblong berries nearly 1 in. in diameter, and of a deep black colour. The flesh is firm and juicy, and, although the Grape is not particularly rich in flavour, it is a handsome, late-keeping variety, the skin of which is not so tough as that of Gros Colman. It is said to be the result of a cross effected between Black Morocco and a seedling variety raised at Wortley Hall, near Sheffield, but in shape of bunch and berry, the cluster shown somewhat resembled a well-grown Lady Downes Seedling, without having the tough skin of that variety.

Miscellaneous Plants.—A remarkably well-grown and profusely-flowered group of about thirty Orchids came from Sir Trevor Lawrence, Burford Lodge, Dorking. Among these we noted Cypripedium insigne with about thirty flowers, Odontoglossum Insleayi leopardinum with twelve spikes, and two specimens of Calanthe Veitchi, each bearing four spikes over a yard in length, the individual flowers being large, and of a bright rosy carmine or magenta colour. Dendrobium primulinum giganteum, in the same collection, bore two spikes a yard in length, one of which was furnished with twenty-two lilac creamy-white tipped flowers. A plant of Masdevallia Veitchi bore twelve large and richly-coloured flowers, and a specimen of Trichopilia fragrans in vigorous health had two spikes of snow-white golden-eyed blossoms, having a perfume somewhat like that of the Poet's Narcissus; Sophronitis grandiflora, the most brilliant, and at the same time one of the smallest of all winter-flowering Orchids, was represented by two plants—one being of the normal orange-scarlet variety, the other violet-tinted; a strong plant of Restrepia antennifera bore four large richly spotted brown flowers; a plant of Epidendrum vitellinum majus had eight spikes, one of them branched; and on a very large specimen of the purple-striped Zygopetalum Mackayi, there were over twenty remarkably robust spikes; a plant of Odontoglossum Pescatorei was furnished with a large branched spike, and was accompanied by its allies, Odontoglossum crispum, and O. gloriosum. A supposed new Dendrobe was also shown with this group, seemingly intermediate between D. tortile roseum and D. nodatum, inasmuch as it had the flowers of the first and pseudo-bulbs very similar to those of the last-named kind. A pretty plant of that most graceful of all Odontoglossums, O. roseum, bore four spikes of bright magenta, white-columned flowers. The chaste little Eria coronaria was shown with a two-flowered spike, and the weird-looking Masdevallia chimæra var. Wallisi was represented by a strong plant bearing one of its lurid purple, hispid-looking, long-tailed flowers, its slipper-shaped lip being of a creamy-white. This group was admired as much for the healthful vigour of the plants as for the profusion of richly-tinted flowers which they bore, and it was recommended that a Davis medal be awarded it. Messrs. Veitch & Sons showed a select collection of flowering Orchids, among which were the new purple-spotted Odontoglossum cirrhosum, Cypripedium Crossianum, one of the hybrids raised by Mr. Cross at Melchet Court; a new Cymbidium, supposed to be C. Parishi; the chaste, white-flowered Lycaste Skinneri alba, Lælia albida, Masdevallia candida, a well-flowered Odontoglossum Rossi majus, Cypripedium Maulei, the ever-flowering and attractive Cypripedium Sedeni, and a finely-flowered specimen of Lælia anceps. A plant of Masdevallia Barlæana, a kind in the way of M. amabilis, but broader in the sepals, was also shown, as was likewise Lælia marginata, the latter furnished with a large bright lilac-crimson-lipped flower. Mr. Parker, Tooting, sent two potfuls of Aponogeton distachyon, a plant which he has growing in pots of soil set in pans of water, under which treatment they flower quite as freely as if in their natural watery element. With these came two plants of the evergreen, shrubby-habited Iberis semperflorens, which is now flowering freely in the open air at Tooting, the specimens exhibited having been but recently dug from the beds out-of-doors. Mr. Ollerhead, Wimbledon House, furnished two finely-flowered specimens of Plumbago rosea, some of the spikes on which were fully 3 ft. in length. These plants were 7 ft. in height, and clothed from top to bottom with leaves and flowers. They were struck from cuttings last year, and have been grown on the back wall of a Melon-house. Associated with these were some fine spikes of the orange-scarlet-flowered Euphorbia (jacquiniæflora) fulgens, which had been grown in the bed of a Pine pit. Messrs. Veitch & Sons exhibited a dozen well-grown Poinsettias, and a beautiful collection of cut flowers of Pelargoniums came from Mr. H. Cannell, of Swanley. Mr. Green, Holmesdale Road, Reigate, furnished a seedling from his hybrid Streptocarpus Greeni having six flowered spikes of delicate azure-tinted blossoms, the limbs of which measured quite 1 in. in diameter. A collection of dried American Maple and other coloured leaves, and dried sprays of Lygodium palmatum and the Bird's-foot Maiden-hair Adiantum pedatum were exhibited by Mr. W. Howard, 29, King Street, Covent Garden. These are well adapted for decorative purposes or for albums, their natural colours being remarkably well preserved.

Fruit and Vegetables.—Mr. W. H. Bland showed six seedling Apples, and Mr. P. Grieve sent four seedling Pears. Mr. Merryweather furnished examples of Bramwell's Seedling, a large kitchen Apple in good condition. Well-coloured, old, flat, red, Italian Tomatoes came from Mr. H. Bennett, of Rabley, together with a fresh and handsome brace of the Rabley Cucumber. Mr. Bell, of Clive House, Alnwick, showed Lady Downes Grapes and a new seedling, to which a first-class certificate was awarded, and which is alluded to elsewhere. Mr. Bennett obtained a cultural certificate for a punnet of Garibaldi Strawberry, a variety of the Stirling Castle type, and one which is quite distinct from Vicomtesse Héricart de Thury, a kind with which it has got in some places intermixed. The plants shown by Mr. Bennett, both fruiting and successional, were in excellent health, and loaded with fruit ripe and ripening.

Chrysanthemums at Garbrand Hall, Ewell.—A large orchard-house here filled with Chrysanthemums is now one blaze of bloom. The house, which is a span-roofed one, is 100 ft. in length, and the plants are arranged on either side of the pathway, while at intervals such kinds as Mrs. G. Rundell, George Glenny, and Golden Beverley form beautiful arches overhead. A great many of the flowers are larger than usual, and very perfect in shape. The Japanese varieties are especially remarkable, on account of their singular and grotesque appearance.—Wallace Morse.

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

As some of your readers are now considering for the first time what should be their line of action in the present crisis of the Society's affairs, will you allow me, though at the risk of repetition, to re-state the grounds on which our committee recommends the guinea and patron four-guinea fellowships? No doubt at its commencement the Society was composed of horticulturists, and was carried on for exclusively horticultural purposes; and probably in later times it was wise, by the aid of the fashionable Chiswick great shows, to get increased funds to spend on horticulture. Probably the mistake was when the number of horticulturists, or those interested in gardens, had very greatly increased not making great exertions to bring them into the Society, and that the want of sufficient of the horticultural element has been the cause of the Society's chronic want of prosperity. I believe the most practical course now to take is this—first, to remove the source of mischief at the root, to concentrate our efforts to bring in enough would-be Fellows from all parts of the country to make a society representing those who love gardening, and those who have most studied or take the greatest interest in gardens and in horticultural science. The experiment in this district has proved that there are abundance of owners of gardens in the country ready and willing, if asked, to form a society with a sufficient revenue for all our wants. Letters in answer to the circular, which has now been widely distributed, show that in England, Scotland, Ireland, Wales, and Jersey, horticulturists adopt the guinea fellowship, believe that it will produce a strong, lasting society, and are willing to take trouble in canvassing their neighbours. Given, a constituency really representing the horticulturists of the kingdom, surely in this country we have a right to say that it is certain (after possibly a few difficulties) to shape for itself, first a good government, and afterwards to secure that its government shall not be slack in its work. I, for one, should advise little change in the present executive. It is both experienced and able; why the many good councils who have devoted great labour and much valuable time to the affairs of the Society, with the result only of successive failures, is not owing to the fault but to the composition of the Society, and the encumbrances due to this composition. It is encouraging that out of the six letters received by post while this was being written, with names of would-be guinea Fellows, two of the number—one from Yorkshire, the other from Leicestershire—ask for circulars to distribute, and two other names are those of ladies.

Heatherbank, Weybridge Heath. George F. Wilson.

NOTES AND QUESTIONS—VARIOUS.

Sedum brevifolium majus.—This is undoubtedly one of the best of all white-leaved Sedums for winter decorative purposes; it grows more freely than the old S. brevifolium, and its compact, cord-like, glaucous foliage renders it useful for rockeries, for edgings, for borders, or for small clumps. It is used for this purpose in Messrs. Rollisson's nursery at Tooting, where it has a pretty effect.—S.

Tree at Nice.—I am anxious to ascertain the name of a tree that is to be found in January on the promenades and public gardens in Nice; it is not a Eucalyptus, or Palm, or Pepper Tree, but a coarse-looking tree of medium size. If I remember rightly, it has large leaves, but of what shape I cannot say. If, with this poor description, any of your readers can give me its name, I shall feel greatly obliged.—R. W. G.

Law respecting the Removal of Shrubs.—Can a tenant whose seven years' lease expires in May next legally remove or sell such plants as Gooseberries, Currants, Raspberries, and Strawberries, all of which he has raised or purchased during his lease?—G. W. [He cannot legally remove them except he is a nurseryman, or has some special agreement with his landlord to that effect.]

Snails and Tobacco-powder.—My Ferns were eaten all summer by a small snail, so much so, indeed, that I could not get a frond above 2 in. high. I examined them night and morning, but could not get rid of the depredators. One day, however, I was dusting some small plants with Fowler's Tobacco-powder, and by chance I dropped some of it on a snail, which seemed to be killed by it almost instantly. I afterwards dusted half-a-dozen Maiden-hair Ferns with this powder, and with excellent results, for they shot up strongly, and have not been troubled with snails since; it might therefore have the same effect upon Cucumber plants.—G. Walton, *Ellerslie, Liverpool.*

The Earliest Spring Flowers.—Can you name a few of the very earliest spring flowers that would bloom well? I leave my garden early in April for town, and want to grow mostly those that bloom very early.—L. J. G.—[The following will doubtless answer your purpose, viz.: Violets, blue and white, in variety; Hepaticas, blue and pink, single and double; Mycsotis dissitiflora; Arabis albida; Aubrietia grandiflora; Pansies in variety; Erica carnea; Saxifraga oppositifolia; Primrose, double lilac, do. white, do. purple; Daisy, white and Aucuba-leaved; Iris, dwarf early; Lamium maculatum; Tussilago fragrans; Wallflowers; Oxlips; Winter Aconite; Snowdrop; Scilla bifolia, S. sibirica, S. praecox; Crocuses; Dog's-tooth Violet; Hyacinth; Anemone; Tulip; and Daffodil.

Jeannel's Fertilizer.—On June 12, 1875, a receipt was given for this fertilizer. Phosphate of ammonia at a chemist's costs 4s. per lb., and nitrate of ammonia 2s. per lb. The manure is very valuable, but expensive. The impure salts would answer as well and cost much less. Where can they be purchased retail?—J. Norte.

Notice.—"H. Simpson," "Gedney Dike," "A W.," "J. C.," and others are reminded that we never name plants or fruits unless the full address of the sender be given. The printed name of a plant or fruit can be of no interest to any but the person who sent it, and therefore we always reply by post upon receiving the address.

No. 265.] SATURDAY, DECEMBER 16, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ORNAMENTAL GRASSES FOR HOUSE DECORATION IN WINTER.

THERE has been a considerable increase in the use of Grasses for house decoration of late, and with good reason, as few things are more beautiful, and no plants retain their beauty so long and so perfectly. Cut at the right time many of them retain their beauty and grace for months, and indeed for years. We have seen them quite fresh-looking after ten years in a glazed case where preserved from dust. At present few Grasses are grown for ornament, that is so far as the markets and shops are concerned; too few, also, are grown in private gardens. The culture of ornamental Grasses has never been well done in any garden we have seen. Many beautiful kinds are not introduced; therefore it is probable that when a greater variety of choice kinds is obtainable, beautiful Grasses will be oftener seen than is now the case. At present the most extensive supply comes from the South of Europe, and Messrs. Hooper, of Covent Garden, are the great wholesale dealers in them in this country. This house has of late distributed great quantities of the more popular Grasses throughout the country. The light and elegant Feather Grass, which probably few persons have considered in relation to weight, almost loses a charm when we learn that *tons* of it are imported and sold every winter. Great numbers of ornamental Grasses are sold in mixed bunches or bouquets, sometimes combined with Everlastings. In the formation of these bouquets over forty young girls are employed by Messrs. Hooper, some of whom earn as much as 25s. a week. The result of the packing of the Grasses is to deprive them of much of their graceful, open disposition. Thus such airy kinds as Agrostis nebulosa, and such gracefully-pendulous ones as Bromus brizæformis are by no means so attractive when both airiness and grace are crushed out of them in the packing. Their old form, however, may be restored by a simple process—steeping them in water for a night, hanging them up by the stem in the morning to dry, and, when half dried, gently shaking them out. They will in this way resume their original open disposition. The Pampas Grass is often gathered young before the plants are matured, and sometimes from packing or other causes the plumes do not assume their most graceful and open form. By holding them carefully near a fire and gently waving the plume to and fro they gradually spread open and assume a more graceful form. The noble New Zealand Arundo (A. conspicua) is, when well-grown in the Southern Counties, quite as valuable as the Pampas Grass, and it is to be hoped that its fine inflorescence may soon be generally obtainable for winter decoration. It is, perhaps, needless to speak of various other exotic Grasses of great beauty, when our own wild Grasses are not collected for use as winter ornaments. Some of our own wild Grasses are very beautiful, and if collected carefully before they were too ripe, they would form valuable ornaments for filling vases and like uses in winter. V.

OVERPLANTING.—The evils of overplanting and the neglect of thinning are as apparent as ever in gardens. They were brought to our mind the other day by an article in "Bell's Weekly Messenger," in which some allusion was made to the squares of London, and among them to Bedford Square, which the writer considered somewhat too thinly planted. Now this square, although only a little over an acre in extent, contains so many stately trees that it gives one a better idea of the dignity of the woods than may often be obtained in the native country of the Plane trees, which in Bedford Square attain such fine proportions. In addition there are as many young trees as any wise planter would care to use where there is as yet no sign of decay among the oldest and finest trees. Space of course there must be for free air and sun between the trees and for those spaces among them without which they may not be seen to advantage. If in such a case any person can suppose planting to be too thin, it is not surprising that young plantations should often be very much too thickly planted. It is to ignorant notions of this kind we probably owe the destructive overcrowding which may be seen alongside of Piccadilly and in various London public gardens. The cause of ornamental tree culture suffers much from overcrowding. Planting for the sake of more variety, for the sake of establishing new groups and new aspects of vegetation, and for the sake of keeping up the supply of young trees, might well be done every year in most gardens of any extent, but it should be done without overcrowding, and there is generally so much planting and overplanting, that the axe must be plied as vigorously as the spade.

THE "JOURNAL DES ROSES."—A new monthly journal with this name, and devoted to Rose culture, will begin in January. It is projected by Mr. Cochet, of Suisne, near Brie-Comte-Robert, and will be edited by M. Camille Bernardin, of Brie-Comte Robert, Seine-et-Marne, France.

PRICES OF GRAPES.—Fruit of the Gros Colman Grape now sells better than that of any other variety in Covent Garden Market, where the retail price just now for home-grown fruit varies from 5s. to 8s. per lb.; Alicantes fetch 5s. to 6s.; and Muscats 6s. to 7s. per lb. The Jersey growers are now sending Gros Colman Grapes to our markets, where they realise from 5s. to 6s. per lb. The Channel Islands fruit growers can grow good hot-house Grapes with less fire-heat and at less expense than English growers, who will henceforth have to compete with them in Grape growing, and lower prices are sure to be the result.—B.

LUCULIA GRATISSIMA.—This beautiful and fragrant shrub, although usually treated as a stove plant, will thrive under good culture in any ordinary warm house. It is, however, seldom seen even in our London nurseries, though it deserves a place in every establishment. Although naturally somewhat straggling in habit, it may be induced to become bushy by judicious pruning. It may be struck, though not very readily, from cuttings, and it is not particular as to soil, but a compost of peat, turfy loam, and sand suits it best. Good plants of it will generally flower at every point, and few flowers would be more acceptable about Christmas time than the delicately-scented blossoms of this plant. It might also be planted out and trained against a wall in a warm conservatory with excellent effect.—P.

PEARS FROM CALIFORNIA.—A large proportion of our choice winter Pears are obtained from France, Belgium, and the Channel Islands, but during the past week samples of Easter Beurré have been received in good condition from California, and larger consignments are expected; henceforth, therefore, Continental fruit growers to whom we pay thousands of pounds annually for Pears alone, will have to compete with the growers of the Western States of America, who have cheap land and moderate transit charges, and one of the best of all climates for choice late Pears, these being likely to keep and travel better, owing to their having been ripened in a drier and more sunny climate than even that of Southern Europe.—B.

INTERNATIONAL HORTICULTURAL EXHIBITION AT AMSTERDAM.—Great preparations are being made at Amsterdam for the International Horticultural Exhibition, to be held there next year It will be the largest exhibition of horticulture ever held. The objects exhibited will be divided into ten sections, sections 1 to 9 comprising no fewer than 662 classes.—1st, plants for the stove and temperate-house; 2d, greenhouse and conservatory plants; 3rd, open air plants; 4th, arrangements of plants and flowers; 5th, fruits, vegetables, and seeds; 6th, industry as applied to horticulture; 7th, art as applied to horticulture; 8th, the progress of horticulture; 9th, horticultural science and instruction; 10th, objects not coming within the scope of the previous section. The exhibition, which will be held in the Palace of Industry, will be opened in April next, and a Horticultural Congress will be held during the summer at Amsterdam, under the presidency of Professor Reuwenhoff, of Utrecht. The various committees in connection with the exhibition comprise among others Baron von Catwijck, Prof. Oudemans (of Amsterdam), Baron Van de Gelder, Prof. de Boer (of Groningen), Prof. Suringar (of Leyden), Dr. G. F. Westerman (Amsterdam), &c., the general secretary is Mr. H. Groenewegen, of Amsterdam. The King of the Netherlands is taking great interest in the exhibition, of which he is the patron.

Tropæolum speciosum.—This useful climber is much more commonly grown in Scotland than in England, where it should certainly be oftener met with than it is. I brought a quantity of roots of it from Perthshire and planted them here. Last year they did not grow much, but, being thoroughly established this season, they have grown and bloomed profusely against an open wall. From June until quite lately they have been a perfect sheet of scarlet. For trailing over root-work this Tropæolum is well suited, it grows freely in pure loam, and its roots may be planted from November until March with every certainty of success.—G., *Derby.*

NOTES OF THE WEEK.

Mandragora autumnalis.—I send you a December flower which is rather rare, but one which is well worth growing—it is Mandragora autumnalis. There are about a dozen flowers in a bunch in the centre of the leaves, looking very much like a bunch of Anemone pulsatilla, but with very different leaves.—Henry N. Ellacombe, *Bitton.*

Tyerman's Groundsel in Autumn.—Mr. Atkins, of Painswick, informs us that this Groundsel (Senecio pulcher) is still in fine flower in his garden, and is likely to remain so for some weeks to come, if severe frosts do not set in.

Cymbidium Mastersi.—Several specimens of this Orchid in Messrs. Henderson's nursery, Pine-apple Place, are now producing large flower-spikes, each of which is bearing from nine to ten blossoms, and which, when fairly open, will have a charming effect.

Strelitzia reginæ in Bloom.—A large plant of this in the Palm-house at Kew is now producing upwards of twenty fine spikes of flowers, many of which are already open. These, as is well known, last long in good condition, and are strikingly handsome in appearance.—S.

Australian Blackberry (Rubus australis).—Well-grown clumps of this plant have a fine appearance at this season when planted at the corners of walks or on rock-work, and small plants of it soon become established in good soil, and their multitudinous green wiry branches, thickly armed with small white spines, render them very ornamental.—S.

A White Berry-bearing Plant.—About this time of year there are usually abundance of scarlet-berried plants in our greenhouses, but few possessing other colours. Leucocarpus alatus, now to be seen at Kew, supplies this deficiency, and when laden with its creamy-coloured berries, as the plants now at Kew are, it has a very pretty effect, especially when associated with Solanums, Aucubas, and similar ornamental-fruited plants.

Liberian Coffee Plants.—Large quantities of small plants of this kind of Coffee are now being prepared in Messrs. Carter's nursery at Forest Hill for shipment to India. They have been raised in square, wooden boxes, filled with soil to within 3 in. or 4 in. of the top. As soon as the plants have grown level with the rims of the boxes the lids are fastened down, and they are thus ready for packing.

Recreation Grounds at Sheffield.—At a meeting of the Sheffield Town Council, held on Wednesday, it was stated that the Duke of Norfolk had offered to present to that town three sites, each of ten acres, as recreation grounds. All the sites are situated close to populous parts of the town, and they will be a great boon to the inhabitants.

Chamædorea Ernesti-Augusti in Bloom.—A specimen of this well-known Palm is now blooming freely in Messrs. Carter's nursery at Forest Hill. It has produced four or five strong forked flower-spikes, 4 ft. or 5 ft. in length, which are of the brightest crimson colour and dotted with dark spots. Associated with other fine-leaved plants, this now forms a striking object.

Triteleia uniflora lilacina.—A mass of this spring-flowering bulbous plant is now blooming freely in Mr. Ware's nursery, the continuous mild weather which we have experienced having doubtless brought the blossoms out earlier than usual. They are, however, not less beautiful than if they had been later, and, being associated, as they are, with a thicket of green healthy foliage, they serve to remind us that spring is not far distant.

Dendrobium crassinode.—Numerous plants of this beautiful Dendrobe are now flowering freely in the Orchid-house at the Pine-apple Nursery. They are growing on pieces of virgin Cork, suspended from the roof, a position in which they appear to thrive remarkably well. Few of the Dendrobes are more beautiful than this, its pure white purple-tipped petals and delicate yellow throat being colours that harmonise well together, and give the flower a remarkably handsome appearance.

Sempervivum Donkelaari.—This is a plant the culture of which deserves more attention than it at present receives; its large, yellow flowers, produced abundantly by well-established plants, render it very desirable, either for conservatory or other indoor decorative purposes. Plants of it in 32-sized pots in the Pine-apple nursery are now loaded with large heads of bloom, which, when intermixed with flowers of other colours, have a striking effect.

American and French Apples in Covent Garden.—Newtown Pippins are beginning to get scarce, the prices now realized for them varying from 30s. to 40s. per barrel; brightly-coloured Baldwins fetch about 22s. per bushel; Russets, 25s.; and culinary sorts, such as Spitzbergen and Greenings, realize 22s. 6d., per barrel. Blenheim Orange Pippins now bring from 8s. to 10s. per bushel, and French Dieudonnés and Reinettes 12s. per barrel. Apple culture at half these prices would be more profitable than the growth of timber, and yet, while thousands of acres are being yearly planted with trees for timber, how seldom do landed proprietors ever plant an acre of Apple trees.—B.

Anopterus glandulosa.—Quantities of small plants of this useful winter-flowering greenhouse shrub are now blooming freely in Messrs. Fraser's nursery at Lea Bridge; its blossoms, which resemble those of the Lily of the Valley, except that they are larger and not quite so white and delicate, last in good condition a considerable time both on the plants and in a cut state, and are, on that account, valuable at this season.

Clerodendron speciosum.—A large plant of this trained up the rafters of one of the plant-houses at Kew is now and has been for several months past heavily laden with large trusses of blossom associated with an abundance of healthy foliage. Though evidently closely allied to the well-known Clerodendron splendens, it is, nevertheless a plant well worthy of a place in even the smallest collection, its blossoms being so strikingly showy, and produced in such profusion during the winter season, when flowers are comparatively scarce.

Sonerila Hendersoni argentea.—Though generally grown for its ornamental foliage this should also be cultivated for the sake of its beautiful flowers, which, when seen in groups or masses in pans or wire baskets, have a fine effect. Numerous well-grown plants of it in the Lea Bridge nurseries are just now blooming freely, and their abundance of small, rosy-pink blossoms, enhanced by bright golden anthers borne well up above the beautifully-marked leaves, has a fine effect.

The Scarlet Wind-flower in December.—I have now (December 13) a fine plant, 1 ft. in diameter, of Anemone fulgens in the most perfect bloom—eight flowers in all, four of which are fully opened. I have just placed a glass over it to prolong its beauty. This same plant flowered all last spring, from February to the middle of May. I know of no hardy border flower of greater value in the spring garden, and believe it to be but very recently introduced (in any quantity) to this country, though quite common in hedgerows in the south of France.—William B. Hartland, *Blackrock, Cork, Ireland.*

Wills' Dracænas.—The houses occupied by Dracænas in Mr. Wills' nursery at Anerley are now well worth inspection, containing, as they do, hundreds of seedlings and recently introduced kinds possessing almost every imaginable shade of colour. It has often been said that D. terminalis would never be beaten for market purposes; it may therefore be interesting to know that D. t. alba, a new kind raised at Anerley, is exactly its counterpart, except as regards colour, which is a beautiful green clearly marked with white. Even D. terminalis itself seems likely to be superseded for general decorative purposes by some of the new red-leaved kinds that Mr. Wills has succeeded in raising.—S.

Insect Fertilization. — It is a well-known fact that insects fertilize flowers, and, therefore, florists do all they can to keep Pelargoniums and other choice productions free from their depredations, for by assisting fertilization they cause the petals to drop sooner than they otherwise would do. Of this we had numerous examples during the late dry season, when seed-bearing was the rule with almost all the occupants of the flower garden rather than the exception. Among plants requiring artificial fertilization, Mr. Meehan (see p. 493) includes Orchids, and certainly that queen of Orchids, Phalænopsis amabilis will remain in good condition from a month to six weeks if not fertilized artificially; but if operated upon by its own pollen or that of another variety, the flowers fade within a day or two, and the seed-pod elongates rapidly. Therefore, except in cases in which improved varieties are wanted, and hybridization is intentionally resorted to, it is desirable that fertilization should not take place at least, where the primary object is the preservation of the flowers. As regards Pelargoniums, we know that kinds that are sterile retain their flowers longer than such as are fertile. Pink Christine, for example, seeds so freely that, if not counteracted by means of frequent hand picking, it becomes entirely exhausted, while other varieties, under exactly similar circumstances, scarcely produce a seed-pod. From my own observation, I should feel inclined to agree in all respects with Mr. Meehan's views, as I believe the question of nutrition as affecting fertilization, to which he refers, deserves more general attention than it receives.—James Groom, *Henham Hall, Wangford.*

THE FRUIT GARDEN.

THE LANGHAM CRAB APPLE.

I have this day (Nov. 22) gathered my last basket of Apples from one of the few trees in my orchard that have produced any great quantity of fruit this year. It is the only tree that still retains its leaves, and it stands at the north-east corner of the square piece of ground on which the trees were planted thirty-four years ago. With the exception of a Wyken Pippin, its immediate neighbour, it is the only tree that has yielded a good crop. This variety originated in Langham, near Oakham, and is known in that neighbourhood as the Langham Crab; but it does not find favour with the local nurserymen, and the few specimens that exist are only to be met with here and there in private gardens. I obtained scions of this variety about twenty-five years ago from the late Vicar of Oakham, the Rev. Heneage Finch, and I placed them on a young Ribston Pippin that I headed back to receive them. After the lapse of years a shoot of the original tree pushed on the north side, and this was allowed to remain till it formed a noticeable part of the tree on that side, and had begun to produce fruit. The consequence has been that for the last dozen

The Langham Crab Apple.

years the tree has become almost equally divided between the two sorts, and although both are more or less cankered, they have shown more disposition to bear than any of the other orchard trees. There was this year a good sprinkling of Ribstons on the north side, but on the south the Langham Crabs hung down from some of the branches like Onion ropes. The same thing happened two years ago, yet there was almost an average crop on it last year. The fruit keeps sound and good through the spring and early summer months, and is valuable as a culinary Apple on that account. I found it would not decay even if kept much longer than that. It is a small Apple, about 7 in. in circumference, smooth, light green in colour, inclining to brown on the side where it is completely exposed to the sun. Certainly it would never take a prize at a show of fruit; but here, where as a rule Apples are neither fine nor plentiful, it is no slight advantage to meet with a sort that will not only yield a crop in adverse seasons, but will keep sound and good till the green Gooseberries take its place. The property of keeping sound through the following summer and autumn months is said to belong to the Gooseberry Apple and the French Crab. The latter I could not get to flourish here, and though I possess one specimen of the Gooseberry Apple, I am not yet able to state whether it is as likely to do as well here as does the Langham Crab. It ought to be mentioned that of the trees I possess very few are duplicates; and whether it is right to judge of the merits of a sort from a single specimen, or whether the tree in question derives any advantage from sharing its stem and roots with a Ribston Pippin, or by being double grafted. These questions I leave to the decision of persons more experienced in such matters than I am.

B. S.

KEEPING FRUITS.

It has often been to me a matter of curiosity, when noticing quantities of beautiful Apples in shop windows for sale, how they were kept in such sound condition till late into June, with apparently but little attention bestowed upon them. On July 15, at a local show, a trayful of Apples grown in 1875 was exhibited together with a quantity of a kind grown in 1876, and the old fruit was almost as fresh in appearance as the new, and I was informed by the gentleman who staged the fruit, that it was as useful for culinary purposes as when newly gathered. As to the storing, that is made short work of: the Apples which are grown in large orchards in great quantities of the most saleable and otherwise valuable kinds, are gathered as dry as circumstances will permit, and are laid in long ridges, often 5 ft. deep. They remain untouched until they have sweated; a covering of straw is placed over the whole, and when they are uncovered to be sent to market, very few are found decayed. According to my informant, last year a potful (about 72 lb.) was not wasted out of a large barn well stocked. Though immense quantities are grown by the side of lanes in hedgerows, &c., for the purpose of cider-making, vast breadths of land in Worcestershire are cropped with the finest kinds of Apples. The great object with Apples is to keep the air from them without the atmosphere in which they remain being allowed to become damp. Pears are treated differently, as they do not keep well with much piling up; they are laid out on shelves in the usual way. This same cultivator gives great attention to Strawberry-growing, but as his system does not differ from what is generally practised elsewhere (viz., plant often and manure well), much must be attributed to the excellence of the soil, which is very heavy, abounding with marl. Many of the Strawberries have measured 8 in. in circumference, and sixteen placed in a row have measured 3 ft. The keeping of fruit depends greatly on its condition as to ripeness and soundness when gathered, and a very common error is a too early gathering. In large fruit-growing counties cultivators are never in a hurry in collecting their keeping Apples, and I have observed that stray Apples found under the trees in the spring of the following year have been sound and good, while their contemporaries in a fruit-room were shrivelled and worthless. The gentleman to whom I refer (Mr. T. Wall, of Rashwood), being a large farmer, does not devote his land solely to Apples and Pears, but flocks of sheep are turned in at certain seasons, and cattle are allowed to feed where the trees are tall. While referring to the ripening of fruits I may add when Grapes were by many considered worthless after being kept by the agency of bottles of water, it was not so much the fault of the system as the absence of thorough ripening, some being under the impression that when colour was present maturity was complete. Even for saleable purposes thorough ripening is a primary object, and those who make the most of their produce by realizing the highest prices give great attention to getting the flavour of the finest quality. As an example I observed last September at a large Grape-growing establishment that while the late Grapes were colouring and many appeared finished, small apertures to admit a little air were made at the front and top, while the pipes were heated to keep up warmth and a circulation of air, and this treatment was to be continued till the fruit was perfectly matured and the berries charged with the necessary amount of sugar to keep them sound late in the season. It was evident that fine as the colour was, and large as the bunches and berries were, a further test was being made to qualify them as first-class fruits, and the extra firing and other attention given to them to secure that end undoubtedly meet with their due reward. Three span-roofed, wide, and lofty houses, each 200 ft. long, and a lean-to, were furnished with crops such as might fairly be termed a triumph in Grape-growing, and, I may add, Grape-ripening.

M. Temple.

WINTER STRAWBERRIES.

Some little surprise has been caused by the exhibition of ripe Strawberries in November, and which are said to have fetched extraordinary prices in the market, and wonder has been expressed that the autumn-fruiting disposition of the Strawberry, under certain conditions, has not been taken advantage of before now. If fruit at this season would pay, it is quite certain that it is more easily produced now than in spring between February and May; but those who wish to

have such late fruit must force for early crops as well, or they will be without plants for their purpose. We are not familiar with the practice of market gardeners in this respect, but it is a fact well known, and frequently turned to account in private gardens, that forced Strawberry plants put out rather late, and treated in a certain way will yield fair crops of fruit in the open ground till frosts set in, and if lifted and put into pots previously, they will ripen the fruit well under glass. Further, any variety that forces well will produce late fruit, and Héricart de Thury is not superior to some others. We have fruited Black Prince, Prince of Wales, Eclipse, British Queen, Keen's Seedling, and Héricart de Thury, all in this way over and over again. Indeed, though we do not force Strawberries extensively, we do not think there has ever a season passed with us in which our late-put-out, forced plants did not produce fruit in greater or less quantity during September and October, and sometimes for a little while in November if the weather were fine. At present fruit, from the setting stage up to the size of marbles, is to be found upon most of our forced plants, but quite blackened by the frost we had lately. Everything depends upon time and treatment in getting a crop. If we can get our early and second early Potatoes off the ground in good time, or find room elsewhere, good late Strawberries are tolerably plentiful; but if planting out be delayed till the middle of August in our late district, fruit is produced, but no great quantity ripens. Several times we have filled a frame with the plants, setting them quite close together, and got excellent crops, but have never forced the plants under glass, for the simple reason that ripe Strawberries so grown are about the most flavourless morsels any one can eat, and because their production is not so urgent at a season when good Grapes, Figs, Melons, Gooseberries, Peaches, Plums, Apples, Pears, &c., are plentiful. In spring it is very different, for Strawberries are then the most acceptable dish that can be placed on the dessert-table. However, there is no reason why those who desire Strawberries at this season should not have them if they have old forced plants to begin with, and provided they go to work in the following manner:—In the first place, those who plant out their forced plants for a crop the following year—as mostly all cultivators do who force extensively, knowing that such plants are sure to bear heavy crops—cannot do so too soon after the middle of May, for the longer the season of growth they have, the heavier the crop will be; but if the plants are to fruit from October onwards, late planting or potting must be the rule. If the plants be put out before the end of June they will ripen their fruit before the latest of the general outdoor crop is over, and will therefore be comparatively valueless. We have often seen a second crop from forced plants in August. Those plants which are intended to ripen their fruit under glass, say about this season, should not, in fact, be planted out at all, but potted at once, and plunged in ashes where they are to make their growth. Whichever plan is followed, there is but one way of treating the plants. As soon as the forced spring crop has been gathered, the plants should be turned out-of-doors in their pots, setting them closely together in some sheltered corner where they can be watered and have their second flowers picked off as they appear; but their foliage must not be interfered with, no matter how brown and starved it looks—the object at this stage being to keep the plants as still as possible, till the beginning of July at the soonest. At this date a number of the earliest forced plants should be selected, their foliage should be shorn clean off close to their crowns, the pot-bound roots should be considerably reduced and shaken out, and the plants potted or planted out, as the case may be, in good soil, taking care that the crowns are just left peeping above the surface. After this, if they have a favourable exposure (pot plants should be plunged), they will soon start and make fine growth, and good strong flower-scapes will be thrown up, which must be left for fruit, which will ripen in September or early in October, according to the weather. All the successional batches must be treated in the same way, and they may be potted at intervals of a fortnight or thereabouts till the beginning of September, and all must be grown out-of-doors while they can. As long as the fruit is ripened in the open air it is tolerably well flavoured, but when finished off under glass in the dull autumn days the flavour is exceedingly poor. The plants will continue to produce flowers till frost sets in, but before this all that have not finished their crop must be placed under glass until they have done so, and for the very latest fruit those plants which are just showing flower, or about doing so, must be selected and forced in the usual way. This is the secret of getting late crops of Strawberries. The important point is not to plant out too soon, but after that to get a good growth and good flowers. It is not a safe practice to pick the flowers off when they happen to come in too early, as the next ones are weaker, and eventually the plants give over flowering altogether. This, at least, was the result with a quantity we potted some years ago, and which flowered sooner than was desired. The best plan is to pot the batches off in succession, and take the crops as they come.—"Field."

Overcrowding Fruit Crops.—Hardy and tender fruits are often not thinned nearly enough. Apples and Pears are often not thinned at all, and to this may be attributed in some measure the glut we have one year and failure the next. Standard trees out-doors are not, perhaps, so apt to suffer from overcrowding as trees on walls and trellises under glass, and it is not uncommon to see Peaches trained so thickly to the trellis as to completely exclude the light from a large portion of the foliage. Vines, too, may often be seen with not more than 6 in. or 9 in. between the rods, forming, when the summer growth is upon them, a complete thicket. In Pine growing it is necessary to have plenty of plants to insure a succession of fruit, but even this is often carried to excess. Whether it be Pines, Vines, Peaches, or any other kind of fruit, the same lesson is taught, that crowding is inimical to the production of good crops. "What is worth doing at all is worth doing well," is a maxim which it is necessary to observe in gardening perhaps more than in any other branch of industry.—J. M.

Standard Gooseberries and Currants.—This is an excellent way of training these useful fruits, but one that is seldom seen in practice in English gardens; it is, however, accomplished, and the fruit produced from trees thus trained is in many respects superior to that obtained from trees trained in the ordinary way. It is never advisable to have the heads far from the ground; on the contrary, a clean stem of, say 2½ ft. to 3 ft. will generally be found a convenient height. In order to have well-shaped standards, it is necessary that training should commence when the plants are small—old, straggling bushes being seldom capable of conversion into anything like satisfactory specimens. Procure young, vigorous plants with thick, straight stems, the tops of which have never been cut off, and plant them in whatever positions may be desirable, after which apply to each plant a strong stake—if an iron one, so much the better. All side-shoots produced within 2 ft. of the ground must be kept pinched off as they appear, and the leader encouraged to grow straight by tying it to the stakes. When the stems have attained a height of 4 ft., and pruning time arrives, it must then be decided upon what height to have the heads from the ground. This done, every bud should be picked out to the required height, when four plump leaf-buds should be left and the remaining portion of the shoot cut off. The shoots produced from the remaining buds the following summer may be allowed to grow at will, and when they have shed their leaves in the autumn they should be gently drawn down into a drooping position, and be all cut to the same length. This bending them down will cause other shoots to be produced from the upper sides of these main branches, and they, in their turn, may be trained slightly down, until a regular and good-shaped head is obtained. In all cases, however, overcrowding of the wood should be avoided—*i.e.*, if crops of large and well-ripened fruit be desired. Some growers of standards use galvanised wire frames, made in the shape of an umbrella, on which to train the heads of the trees, but if the branches be kept in their places by means of ties and a few stakes for a year or two, and be judiciously pruned every year, such expensive and formal-looking contrivances may easily be dispensed with. Gooseberries and Currants are grown as standards to a considerable extent in Bohemia and Moravia, the trees being grafted on stocks of Ribes aureum, which has been found to produce vigorous and fertile specimens.—S.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Delices d'Hardenpont Pear.—This is at present by far the most delicious Pear we have fit for table, rivalling even Marie Louise in lusciousness. It is a sure and prolific bearer on the Quince stock, but shy on the Pear: it is so good that it is worthy of the best position on a wall in every garden.—W. W. H.

Pine-apples for Market.—Considering the enormous quantities of foreign Pines that are now being imported, it would seem impossible for English cultivators to grow them profitably. Nevertheless, Mr. Wilmot, of Isleworth, fruits them in large quantities all through the year, but chiefly during the summer and autumn, when they meet with a ready sale; for, however large and good the foreign fruits may be, yet, in point of flavour and general quality, they are inferior to good English-grown Pines, especially to such sorts as Queens and Black Jamaicas, which are the varieties principally grown in market gardens near London.—M.

Heavy Bunches of Gros Guillaume Grape.—Mr. Roberts, of Charleville says Gros Guillaume with me can be grown up to 25 lb. the bunch, a weight which I think no other black Grape can reach. It is good in shape and in form, well coloured, and excellent in flavour when kept up to mid-winter and onwards, and it will hang as long as may be desired; it is a strong grower, and a free bearer. The three bunches of it which I lately exhibited in Dublin, weighed collectively over 45 lb.; these were grown on the one Vine. The crop was reduced to that number to meet the terms of the Royal Horticultural Society's Schedule, viz., to have three bunches to form the "Dish." Had there been a class in the schedule for the "Heaviest Bunch," then I should in all probability have reduced the crop to the single bunch, and I have no doubt I should have been able to have grown the largest bunch of the three shown to a weight over 25 lb., and that with evenly swelled and well-coloured berries.—"Gardeners' Record." [Since the above was in type photographs showing the size and beauty of the bunches in question have been sent to us by Mr. Roberts.]

COTTAGE GARDENING.

The Cabbage.

Except the Potato there is no other vegetable so universally grown or so thoroughly appreciated by cottagers as the Cabbage. It will grow anywhere and under any conditions, but like most other vegetables it delights in a deep, rich soil; it is desirable, however, to have it in a somewhat firm condition where early produce is desired. In some places young Cabbages are frequently cut off by severe weather in winter, especially if planted in autumn in loose, freshly-worked land. The remedy in such a case would be to make the ground somewhat firm before planting, or to have it prepared a month or so before in order to give time to settle. Planting any kind of green crop on loose, soft land in autumn encourages an early, luxuriant growth, which is liable to suffer during a severe winter. Of course, where the land is never dug more than one spit deep, the objection does not apply with so much force, but every cottage gardener ought to arrange his cultivating operations and his crops in such a manner as to enable him to dig the whole of his land at least 2 ft. deep every four years, and he will find in the long run that this, instead of adding to the cost of working his land, will in reality cheapen production, if the improvement in the quality and quantity of the crops be taken into consideration. It scarcely requires any argument to prove that anything that opens up new sources of plant food almost free of cost must be a great boon to the cottager, and will eventually become an increasing source of profit to them. Sow from the middle to the end of July, according to the earliness of the situation. If the weather be dry, which is frequently the case in July, have the ground thoroughly soaked with water twelve hours before sowing the seeds, and afterwards shaded by laying a mat over the bed. Rhubarb leaves or branches with the leaves adhering can be used, only they must be removed and the earth between the young plants loosened up as soon as they appear. The seeds should be sown thinly in drills about 8 in. apart, and the ground for the main crop should be prepared and made ready for planting by the first or second week in September. Many cultivators usually plant Cabbages after the Onion crop; I have done so for years, and the only labour necessary is to hoe the ground up deeply, draw drills 2 in. or 3 in. deep and 20 in. apart, and plant in the drills 18 in. apart. This plan answers well where the ground has been deeply worked and made very rich for the Onion crop, but must not, of course, be taken as applicable to every situation and under all circumstances. In a country like ours where the geological conditions are so varied no rule can safely be laid down for the guidance of all alike. The small plants that are left in the seed-bed may be pricked out thickly in some vacant corner till spring; they will come in useful to fill up vacancies and to make another small plantation for succession to those planted in autumn. If it be considered desirable, another sowing may be made in March or April to plant out in any spare land for autumn use, but, unless the demand for Cabbages be considerable, this will hardly be necessary, as if the stems from which the early Cabbage have been cut be allowed to remain, and the leaves carefully trimmed off, each stem will produce three or four small hearts quite equal to those planted late in spring in quality though not quite so large; in fact, the second crop on good land is superior to the first. The old stems should be cleared off in time to have the land ridged up roughly in winter for Potatoes the following season, as that crop will be found a very good rotation, and as other crops of Greens will be ready by that time, the Cabbages may be dispensed with. Three of the best kind for garden culture are Atkins's Matchless, Wheeler's Cocoa-nut, and Enfield Market.

Savoy Cabbage.

Where bulk rather than quality is the object sought, sow Drumhead early in March, and plant out in June in drills, 2 ft. apart, and 20 in. in the rows. But for garden culture, where delicacy of flavour is appreciated, plant the smaller kinds, such as the Dwarf Ulm, Marcellan, and King Koffee. The latter is a delicious vegetable, very tender, and less coarse in texture than the larger kinds; although small, it may be planted so much closer together, that after all it will be found to be a profitable crop. Sow in March, April, or May, according to the time the crop may be required; and it is a really good plan to sow a few seeds in each month; and put out a few plants at intervals in any convenient spot, from May to August. Planted in rows, 1 ft. apart, and 9 in. in the rows, will be ample space between.

Red or Purple Cabbage.

This vegetable, so desirable for pickling, may be sown at the same time and treated in the same way. They may also be sown in March, and if planted out on good land, when large enough, they will produce firm, late hearts, not quite so large as the produce of those sown in the autumn, but they will keep longer, and may perhaps be more useful for home use.

Brussels Sprouts.

I have often thought that if small cultivators knew and appreciated the value of Brussels Sprouts as a winter vegetable, it would receive more attention at their hands than at the present time. There is no gainsaying the statement that cottagers, as a rule, do not cultivate vegetables to so great an extent as lies within their power. Happiness is in some measure dependent upon health, and health is largely influenced by the nature and variety of the food supply. I most willingly admit that Potatoes, according to our present tastes, are well-nigh indispensable, but that does not furnish a sufficient reason for our remaining satisfied with them only when other vegetables that are nutritious and easy of cultivation may be had in abundance without much trouble or outlay. Brussels Sprouts are both hardy and prolific, the severest winter usually leaving them unscathed; and by sowing two or three times at short intervals, a successional supply of this delicious, compact vegetable may be obtained in plenty, from October to March; while the old stems will afterwards produce several dishes of tender young greens. Sow a pinch of seed early in March, and again about the end of April. In cold, late situations, this and several other winter Greens may be advantageously sown thinly in September, left in the seed-bed during the winter, pricked off early in spring, and put out finally early in May. This treatment insures an early start, and consequently a long time for growth; and where an autumn supply is desired, it will be found a very good plan to adopt, but though it involves more labour, and the crop occupies the land for a longer time, yet a fuller development of the plants and a better and earlier crop are thereby secured. In many cases an early crop is not required, therefore the March sowing would be early enough, with the April sowing to follow on after Christmas and lengthen out the supply. Although they will make a good return under any reasonable conditions, yet deep, somewhat strong land suits them best. They may be planted immediately after the early Potatoes, if the land be in fair condition, without much preparation, and again a later crop in July wherever land may be vacant. Those plants that are put out early will require rather more space than the later crop—2 ft. apart each way will not be too much for the former if the land be in good heart; whilst for the late crop, 20 in. between the rows and 18 in. between the plants in the rows will suffice. There is a considerable variation in this vegetable, therefore it is important to have seeds only from a reliable source, whether imported or home-grown, I think, matters but little if the stock have been selected with care.

Borecole, or Kale.

The dwarf Green Curled and the Cottager's are the best varieties for small gardens, and they require the same treatment as Brussels Sprouts. E. Hobday.

Vegetable Crops between Fruit Trees.—Am I right in proposing to grow vegetable crops in a small orchard?—F. [Excellent examples of good culture may be seen in London market gardens, in which Rhubarb and other vegetables are planted beneath the orchard trees, but an orchard proper should, after the trees become established and when the necessity of root-pruning is not likely to occur, be sown down with Grass seed or laid with turf, frequent digging and stirring of the soil amongst fruit trees being often more injurious than beneficial.]

Large Wild Pear Trees.—At Torek, in the northern Caucasus, according to Professor Koch, of Berlin, Pear trees 80 ft. and even 100 ft. high, are not rare, and with trunks from 3 ft. to 4 ft. in diameter.

THE FLOWER GARDEN.

A NEW AND BEAUTIFUL GRASS.

THE ZEBRA-STRIPED EULALIA.

One of the most beautiful of ornamental Grasses is the variegated Eulalia japonica, which was sent from Japan several years ago by Mr. Thomas Hogg. It is a robust, perennial Grass, forming, when well established, large clumps with firm, but graceful leaves, which are marked with alternate stripes of creamy-white and green, much after the manner of the old Ribbon Grass of the gardens, and presenting quite as much variety in the striping, being is taller and more erect than that, and the leaves are longer and more robust. The flower-stalks appear in September, and the plant at this time is from 4 ft. to 6 ft. high. The flower-panicles are at first brownish, with erect branches, and not at all showy, but as the flowers open the branches of the panicle curve over gracefully in a one-sided manner, and bear a strong resemblance in form to what is known as a Prince of Wales' feather. Each of the individual flowers, which are very numerous upon each branch of the cluster, has at its base a tuft of long, silky hairs, and these contribute greatly to the feathery lightness of the whole. This plant, which long ago ceased to be a novelty with us, although it has not ceased to be a prime favourite, is just now attracting attention in England, and has recently been figured, though very poorly, in one of the English horticultural journals. It is offered by some dealers under the incorrect name of E. Imperati. When Mr. Hogg sent this it was accompanied by another variety of the same Grass, which did not survive the effects of the journey. Upon a second visit to Japan he procured other plants of this last variety, which reached this country in good condition. This variety, which it is proposed to call Eulalia japonica var. zebrina (the Zebra-striped Eulalia, in all that relates to form, habit, and its flowers), is quite like the other, but differs most essentially in the manner of its variegation. In the older variety the leaves, according to the usual manner of variegation in Grasses, have the markings run lengthwise of the leaf, while in this zebrina variety they run crosswise. The leaves of this Grass present alternate bands of green and cream-white of varying width, but with the colours quite well defined and producing a most singular effect. Japan is remarkable for the great number of plants with variegated foliage that it has contributed to our collections, but we have not seen any variegation that interested us so much as this peculiar Grass. We have seen but one other plant with its variegation so singularly disposed, and that was also from the same country. In the quaint little garden attached to the Japanese Bazaar at the Centennial Exhibition was a Bulrush (Scirpus), the cylindrical stems of which were marked transversely, though the markings were much less positive than in the Grass in question. Aside from the ornamental effect of its peculiar transverse markings, this variety has great interest for us in a physiological or pathological point of view. It is claimed by some that all variegation of foliage, or at least that in which the green of the leaf is changed to white or yellow, is an indication of disease, and this view is strongly maintained in spite of the numerous instances in which the variegated plants are more vigorous and hardy than typical plain green ones of the same species. To those who hold this view—that variegation is due to disease—this zebrina variety of Eulalia presents a difficult problem. As the circulation of the juices of the leaf must take place in a lengthwise direction, the nutriment for each green portion of the leaf must pass through one of the coloured sections, and those who regard these white or whitish bands as marks of disease, will be puzzled to account for the occurrence of green sections of the leaf, which, though placed directly between two "diseased" portions, remain in perfect health throughout the whole season of growth. We have no doubt that this variety will, like the other, prove perfectly hardy, and will form a handsome and curious addition to our gardens, and is so unlike the ordinary form that it would make a pleasing contrast with that.—*American Agriculturist.*

Stokesia cyanea.—This plant has this autumn furnished the chief supply of blue flowers brought to Covent Garden in a cut state. They first made their appearance early in September, and were to be constantly seen in the florists' shops until late in November. Those who desire a really good autumn-blooming plant would do well to grow this. The blue Aster-like flowers are very large and showy, and are borne on the end of every branchlet, each bloom being about 3½ in. in diameter, and apparently semi-double. In its late-blooming property consists its chief value, for late-flowering, hardy, really good plants are scarce. It succeeds best in a well-drained, warm, sandy soil, but any garden mould will suit it, if well drained and in a sunny situation. It is also very useful for conservatory decoration in autumn and winter. It may be readily increased by division in spring. The slips, after being taken off, should be inserted in a warm border or frame, a few inches apart, in sharp sandy soil. As soon as they get well rooted and begin to grow afresh, they should be transplanted, mixing a little river sand and leaf-mould with the soil. In August some of the plants may be lifted and potted. If, however, large specimens be required, the plants should be potted earlier and shifted on as they require it, in order to obtain large plants before flowers are produced.—S.

California Snow Plant (Sarcodes sanguinea) **Cultivated.**—This singular inhabitant of the summits of the Sierras has attracted much attention from botanists and gardeners, as well as claimed the admiration of all that have seen it in its scarlet splendour, growing from the cold soil under the shadow of the dark evergreens which cluster on the mountains. After all that has been said about the impossibility of propagating this plant, and all the speculations and assertions as to its being a parasite from the roots of the Pine, &c., this plant is actually growing from the seed in the conservatory of Dr. A. W. Saxe, at Santa Clara. Last year Dr. Saxe received from Truckee several Snow Plants, which were taken up near Donner Lake, and, with the earth still adhering to them, transplanted into a common candle-box. Dr. Saxe placed them (still in the box) in a sheltered room under the tank of the windmill, where it was cool and moist. After the plants dried up he pulled them out of the earth and crumbled the seeds and crowns of the plants in his hands, dropping them into the holes where the plants grew. He left the box where it had been placed in the tank-room, and took no further care of it. And now there are two fine plants, as highly coloured and as fine as any that can be found in its native haunts. The soil in the box is the same that was taken up with the plants, and is of a shaly, basaltic, non-silicious nature. We ("California Horticulturist") must give Dr. Saxe credit for his success, as being the first cultivator who has yet propagated the Snow Plant.

A Singular Alpine Spiræa (S. cæspitosa).—Among the plants affecting rocky locations the most eagerly watched and the latest to flower was this remarkable Spiræa. Popularly known under the appropriate common name of Tree Moss, it spreads its closely-matted foliage over the face of bare rocks, insinuating its tap-roots, abundantly garnished with terminal fibres, into the narrowest crevices, to which it adheres with a grip almost as tenacious as the rock itself; only when accidentally it has taken root in a coarse gravelly *débris* can it be successfully removed with its terminal fibrous roots. The main stem, often attaining a thickness of 1 in. or more, divides horizontally into radiating gnarled branches, which send off from the axils of the primary leaves numerous leafy rosettes, by which the growth of the plant is maintained, and from the axils of which the slender-bracted flower-stems arise. These stems, from 3 in. to 6 in. high, are crowned for about one-third of their length with a dense cylindrical spike of small white flowers, with exserted style and stamens, set in a light green tomentose calyx. In thrifty specimens these flowering spikes are occasionally branched. The prostrate-growing shoots, whenever they light upon a suitable crevice, strike root, and thus help to maintain the growth of the parent plant; where these favourable conditions are wanting, the whole plant, often covering several square feet, can be lifted up, showing on the under surface the remains of dead leaves, in the decaying mould of which moisture is retained, to keep up the fresh verdure of the young twigs. It seems to flourish best on the north side of exposed limestone rocks, occupying a considerable range of altitude above the lower foothills, choosing by preference the rugged slopes of moderately-steep canons. Its flowering period is earliest on the higher elevations, continuing from the latter part of August to the 1st of October. The peculiar adaptation of this plant for ornamental rockwork can be appreciated by those who have once seen it in its native haunts, and it is hoped that from plants and seeds somewhat copiously collected it may eventually find a much larger number of admirers in gardens devoted to this charming class of horticultural adornments.—C. C. Parry, in *Proc. Davenport Acad. of Sciences.*

Rose Triomphe de France.—Rosarians have to thank M. Margottin for this grand addition to our Hybrid Perpetual Roses. It should be in every collection, and those who have not obtained it should lose no time in procuring it. Small plants of it from 9 in. to 12 in. high produced with me beautiful rosy-carmine blooms, large in size and bright in colour.—F. Cabe, *Bell Road, East Moulsey.*

Wet Lily Beds.—If Lily beds be so low that they will hold water when the ground becomes frozen, they should be filled up above the surrounding level. For Lily beds nothing is better for this purpose than fresh-water mud and sand, or leaf-mould and sand, well mixed together. We ("Moore's Rural") are convinced from experience that a soil thus constituted is one of the best for most of our hardy Lilies, but especially for such as Lilium auratum, chalcedonicum, Washingtonianum, Humboldti, and others that seem less vigorous in this climate than L. speciosum, longiflorum, umbellatum, and some others.

INVERARY CASTLE.

The town of Inverary stands at the lower end of a small bay where the river Aray falls into Loch Fyne; its Castle has for a long period been the principal seat of the Dukes of Argyll, who have expended large sums in improving and adorning both it and the neighbourhood. Its situation is exceedingly beautiful, and, looking from its embattled towers over the woods which surround it, Duniquoich, with its watch-tower-crested top, comes prominently into view. The Castle itself was built in 1745, and though only 30 ft. above the sea, commands some fine views, especially of Loch Fyne and the opposite hills. Its basement is surrounded by a fosse, which, being no longer wanted as a means of defence, has been planted with Clematises, Escallonias, Jasmines, Cotoneasters, and climbing Roses. Beyond the fosse is a retaining wall, surmounted by iron railing, and covered with Honeysuckles, Roses, Virginian Creepers, and Ivy. In front of the Castle are two circular geometrical flower gardens, each 110 ft. in diameter; and on its south side a broad walk, dividing the flower and American gardens, and margined with Irish Yews, 15 ft. in height. Single specimens of Irish Yews in the grounds here reach 17 ft. in height; and there are also some good trees of Araucaria imbricata. A broad belt, very irregular in outline, enclosing the flower garden on the west and south, is planted chiefly with deciduous flowering trees and shrubs, such as Thorns, Lilacs, Laburnums, and Wild Cherries, intermixed in the foreground and prominent points with choice Conifers. The trees and shrubs on the south-east side of the flower garden are grouped in such a manner as to show off to advantage their different tints; and any remarkable trees, such for instance as Weeping Beeches, Mountain Ash, and Willows, occupy prominent positions in the groups. These groups stand on Grass at wide distances apart; and, in order to give colour and effect to the picture large beds of Tritoma Uvaria, Japan Lilies, Pampas Grass, Gladioli, and similar showy plants are here and there introduced in suitable positions, and with good effect. On the north side of the Castle lies Duniquoich, shown in the accompanying engraving, with its sides covered with bold masses of Larch, Scotch and Silver Firs, Beech and Sycamore. The spring and autumn tints exhibited by this hill, which rises to a height of 850 ft., are grand almost beyond description, while in front of it, and at no great distance from the Castle, runs the river Aray, and between it and the Castle stand some noble specimens of Limes, Tulip trees, Ashes, and Elms, remnants of the olden time. Further to the north-west is a collection of Coniferæ, consisting of sorts of recent introduction, which, with few exceptions, appear to do well. The river Aray, with its waterfalls and cascades, has here and there been skilfully brought into view, the ground in some places having been altered to suit the character of the scenery, which westward from the Castle has been farther enhanced by the introduction of numbers of commemorative trees, consisting chiefly of Spanish Chestnuts, Oriental Planes, and Tulip trees, and beyond these are some of the most picturesque Spanish Chestnuts about the place, the largest of them measuring 20 ft. in girth at 3 ft. above the ground. At a time when Inverary was not so accessible by water as it is now, the principal entrance was situated at the east side of Loch Fyne,

The Great Scotch Fir at Inverary Castle (from a Photograph by Vernon Heath).

a mile distant from the Castle; the carriage drive, by a bold turn round the foot of Duniquoich, coming within sight of the town of Inverary and the Castle, and then running along a high bank overlooking the river Aray, crosses the Frew's Bridge, and approaches the Castle by the north side. In the grounds are some very old Beech avenues planted by the Marquis of Argyll in 1641; in these some of the individual trees measure 19 ft. in girth at 2 ft. from the ground, and overarch the roadways; but limb by limb they break away under the sweeping blasts to which they are subjected, and which play such sad havoc in the forests in this district. In addition to the trees already noticed, some very remarkable specimens are distributed about the grounds, such as Scotch Firs, 14 ft. in girth at 3 ft. in height; Larches, 12 ft.; Oaks, 13 ft.; Ash, 12 ft.; Sycamore, 15 ft.; Arbor Vitæ, 64 ft. in diameter, and Portugal Laurel, 75 ft. Of choice plants that succeed here in groups in the shrubbery, the following are a few examples, viz., Clethra alnifolia, Garrya elliptica, Comptonia asplenifolia, Leycesteria formosa, Spiræa ariæfolia, Mespilus canadensis, dwarf Mountain Rhododendrons, Ligustrum japonicum, Ilex Perado, Arbutus Unedo and mucronata, Cydonia japonica and alba, Gaultheria Shallon and procumbens, Berberis Darwini and stenophylla, Kalmia latifolia and rubra, and hardy Heaths.

The kitchen gardens which lie due north from the Castle, like all old gardens of the kind, are both ornamental and useful. A Yew hedge, 7 ft. high, encloses the south side of it, and the borders on each side of the main walk, which is 10 ft. wide, are lined with flowers. JOHN CAIE.

New Mode of Barking Oak.—A prize of £40 has been offered by the Agricultural Society of France for the best method of removing Oak bark while the sap is at rest—a matter of importance to arboriculturists. This prize, it appears, has been awarded to M. Nomaison, who has invented a method of stripping the bark off trees by means of dry and superheated steam. This is certainly a step in advance if the method has been tested and found to be practicable, and at the same time not too expensive to prevent it from coming into general use. It is a fact that Oak timber is less durable when cut while the sap is flowing than when felled in autumn or winter; therefore a great saving and advantage, too, would be insured if this new process would permit the cutting and removal of Oak timber in copses to be carried on during winter after the underwood is cut, and before the stools are making their young growth; whereas, under the present system of stripping bark in May and June great loss and injury are occasioned annually to underwood stools during the cutting, barking, and peeling of Oak timber while the stools are pushing forth their tender young shoots. Further information as to the working of this new system of bark stripping, with details of expenses, &c., would be highly interesting to arboriculturists.—GEORGE BERRY, *Longleat.*

Planting and Nurseries in Ireland.—It was with pleasure we read in THE GARDEN a paragraph to the effect that notwithstanding the general depression of trade and business, the English nursery trade is just at present more than usually brisk. In this statement there is a two-fold gratification:—Firstly, in view of the benefit to be derived by the trade; secondly, by reason of the wholesome direction in which it indicates that the taste of the hour is tending. Trees, shrubs, and hardy plants! What pictures of sylvan beauty, combined with floral interest, does the mere repetition of these words call forth! Sub-tropicals, fancy Conifers, succulents, summer and carpet-bedding, and all that sort of thing, might be very well in their way, provided the ephemeral craze after each did not distract attention from objects of more material and lasting interests. We must confess that it was by no means with pleasurable feelings we regarded the overmuch attention given of late years by landed proprietors and horticulturists to fashionable frivolities, and their comparative neglect of subjects calculated to be not a passing joy, but a joy for ever. Toying with fancy Conifers and sub-tropicals is neither so pleasant nor patriotic a pastime for the country gentleman as planting large breadths of timber trees with a view to shelter, effect, or profit, and in this respect we think his ancestors were much in advance of him; and yet we now have the advantage of a far richer *répertoire* to cull from than had their fathers for their selection of hardy subjects to embellish the home park or profitably clothe the barren moor or hill-side. There is much room here for improvement, for unquestionably the nursery trade about Dublin or its adjoining counties is not what it was half a century ago, when it could boast of establishments (particularly in the forest tree and shrub departments) second to none. Of the large nurseries then existing only one or two representatives now remain. The once famous Merrion nursery of Messrs. Simpson is now an educational establishment. The Long Lane Nursery (Messrs. Keeffe's), once the home of choice shrubs and house plants, has disappeared, and the ground is now built over. The Richmond nursery (Messrs. Farrell) is also gone. Dunganstown nursery (Messrs. Hodgens) is no more, and is most to be regretted of any, because its disappearance is indicative of the decline of the taste for tree planting. The Messrs. O'Reilly's once famous forest tree nursery at Ballybeg, Co. Meath, comprising nearly 80 Irish acres, has long since been laid down in Grass, the only vestige of what it was being perhaps here and there still standing a stray tree or shrub somewhat different from the more familiar forms with which the Meath rustic is acquainted. We ("Irish Farmers' Gazette") might multiply instances, but these will satisfy. Let us hope, from what is reported from the other side of the Channel, that better times are also in store for the trade here. A hopeful indication of the kind comes to us from the north, for we learn with much gratification that the Messrs. Dickson, of Newtownards, Co. Down, are exporting Roses this season to Portugal, and have also sent consignments to Assam.

A Noble Oak.—We find in the "Florist" the following particulars with regard to the dimensions, &c., of the so-called "Beggars' Oak" in Bagot's Park—a park famous for the quality and quantity of its Oaks. This particular Oak is, moreover, said to be one of the most picturesque trees in England. The height to the crown is 33 ft., above the crown, 27 ft., making the total height 60 ft. The butt and limbs, of which there are fourteen, contain upwards of 850 cubic feet of timber. The circumference of the butt immediately above the swell of the spurs is 27 ft. 3 in., and at 5 ft. the circumference is 23 ft. 2 in. The branches extend upwards of 50 ft. from the butt in every direction; the longest lateral limb extends 55 ft. from the trunk. The spurs or roots, which project above the surface of the ground for a considerable height, measure 68 ft. in circumference. The head is round and full of foliage, drooping almost to the height of a stag, and offering a welcome shelter either in the heat of a summer day or during a storm.

Pheasants Poisoned by Yew Leaves.—Two distinct instances of pheasants having been poisoned by Yew leaves, almost similar to that mentioned by Prof. Tuson, have occurred here within the last two years. One morning, towards the end of November, two years ago, my gamekeeper brought to me five dead pheasants, stating that he had found them close together in one of the coverts, and that they must have been poisoned. I examined the intestines of them all, and could not find the slightest trace of any of the ordinary poisons; but I found the crops of all quite filled with the leaves of the Irish Yew. In the crops of two a few common Grass seeds were found in addition to the Yew leaves. The gizzards of all contained portions of Irish Yew leaves. In the covert where the dead birds were found two Irish Yew trees stand close together. The common Yew abounds throughout all the woods, and it was within a radius of a hundred yards from these two Irish Yew trees where the birds were picked up. Last year, about the same time, and from the very same place, my gamekeeper brought in three dead pheasants. I opened and examined them with precisely the same result, as their crops and gizzards contained nothing but Irish Yew leaves. As it is only in the immediate vicinity of these, the only two Irish Yews in the woods, where any dead pheasants have been found, I came to the conclusion that perhaps pheasants might feed on the leaves of the common Yew with impunity, but that the leaves of the Irish Yew were certainly fatal to them. I fear it is now too late to ascertain to which species of Yew the leaves belong that were found in the crops of the birds examined by Prof. Tuson; but I feel sure that it would interest many others of your readers besides myself to know whether any Irish Yew trees grow near the spot where the dead birds were found, as a means of showing whether in the case of the Yew the poisons known to exist in the parent tree are intensified in the variety.—G. W. COSENS, in "Field."

Osmanthus ilicifolius.—This fine, hardy, evergreen, Japanese shrub is now in flower with us at Bagshot. Curiously enough, like the Holly, its leaves become to some extent spineless when the plant gets old.—CHAS. NOBLE.

Roses for a North Wall.—Will any one kindly give me the name of a free-blooming red Rose to climb on a wall which has a northern aspect?—B. [Amadis is a fine Boursault Rose, purplish-crimson, and the plant of vigorous habit. Splendens, Lauré Davoust, and Ophirie are also good.]

Dead Leaves as Mulching.—"Enquirer's" idea of mulching seems to me a very imperfect one as expressed in the passage—"They could be removed in spring with less labour, when the warmth of the sun would render further mulching undesirable." If there be any time when dead leaves are specially useful, it is in summer, by keeping the ground cool and inducing the roots to feed near the surface.—O. S.

NEW PLANTS.

THE SCARLET FRITILLARY (FRITILLARIA RECURVA).

This plant has flowered quite recently at Kew for the first time in this country, and is certainly one of the prettiest and most distinct species of a large and widely-distributed genus. It is thus described in a recent number of the "Botanical Magazine," t. 6264:—"In colour this is the finest of all the Fritillaries, the red being as bright as that of a Lily, and intermixed, especially in the inside of the flower, with bright yellow. It is a native of California, and belongs to the small group of Fritillaries having Lily-like bulbs. It was first described by Mr. Bentham, from specimens gathered in 1848 by Hartweg, on the mountains of Sacramento, and has since been collected by Fremont, Jeffrey, and many others. We first received specimens of it cultivated in Europe from M. Max Leichtlin. Our stock at Kew was received in 1875 from Mr. Sargent, of the Botanic Gardens at Harvard. In England it flowers early in May or at the latter part of April." The bulbs of this neat and showy little plant consist of a slightly flattened tuberous stock, covered by somewhat widely placed articulated scales,

Fritillaria recurva.

which at first sight closely resemble those of Lilium philadelphicum. A tuft of linear bright green leaves is produced above the soil, and from this rises a slender purplish stem bearing two or three pendent Lily-like flowers, as shown in our illustration. B.

Icacina Manni.—A climbing, tuberous-rooted species from Old Calabar, bearing tufts of inconspicuous yellow flowers in the axils of its large, alternate, bright green leaves. Of no beauty as a decorative plant.—"Botanical Magazine," t. 6260.

Lomaria ciliata.—This now tolerably well-known Fern has broadly-pinnate, ciliated fronds of a fresh green colour, the fertile fronds (as in its ally L. gibba) being very narrow. A coloured figure of it is given in pl. 252 of "L'Illustration Horticole," which, however, represents it in a state of sub-arborescent growth, a condition seldom attained in this country except when designedly ensconced on the trunk of one of the Australian Dicksonias.

Sonerila Mamei.—A tufted little plant, having broadly lance-shaped leaves, dark green above, with large, pearly spots, the under surfaces being glaucous, marbled with reddish-purple. It is not likely to be of much interest, inasmuch as both Mr. Bull and Messrs. E. G. Henderson & Son have numerous beautiful varieties of the same type, the origin of which is Sonerila Hendersoni itself, a seedling from S. margaritacea.—"L'Illustration Horticole," pl. 254.

SOIL FOR FERNS.

The best plant growers and writers on plant culture recommend peat and loam and leaf-mould, and for some species peat or leaf-mould only, as a compost for Ferns, and most cultivators use these materials in different proportions; but, if anything, a preference is given to the peat. One well-known writer on Fern culture states "the soil required for all Ferns is somewhat similar," and he recommends peat and loam, in equal quantities, to be used by those who have limited space at their disposal, and who do not want over-luxuriant plants, while peat and leaf-mould are chiefly recommended for the production of large and vigorous plants—a kind of advice which, according to a writer in the "Field," does not coincide with his experience. Though we have in the main adhered to the common practice ourselves, still we have had doubts about the advantages of peat used to the extent that it is in Fern culture generally, and we have all but come to think that good light fibry loam would be the best staple for most species, rendered light or otherwise, as need be, by the addition of good leaf-mould and sand. Peat is valuable for many purposes; not to be compared with either loam or leaf-mould, which are both more likely to be found in the habitats of Ferns generally than peat. Be that as it may, we have on several occasions been struck with the extraordinary vigour of plants grown without peat, but chiefly in the case of that handsome species, Adiantum Farleyense. Some time ago we saw a number of plants growing in a compost of strong yellow loam, to which had been added a little leaf-mould. For size of frond and general development we have never seen their equal. We bought two of the plants, and they are now in the stove, and growing alongside other plants of the same variety potted in peat and loam, but mostly peat, and anybody might take them to be two quite distinct sorts. Our own plants are dense and neat enough in habit, and look as A. Farleyense usually does with its semi-drooping fronds; but those in the loam are taller than A. trapeziforme, and nearly as erect in the fronds, the leaflets of which are also large and proportionate. A. Farleyense we have heard condemned as a table plant, because of its low habit; but the two plants in question are all that could be desired for such a purpose—they are matchless, in fact, according to our way of thinking. Having the plants small or large may be a matter of taste; but, as showing the effects of different soils, the example is instructive. We should state that liquid-manure has also been given to the plants; but they were strong before they received any. Nor are there any reasons for supposing that the generality of stove, greenhouse, and hardy Ferns would not be benefited by similar treatment. There are none that we know of, and, though we have used loam liberally for almost all varieties, we shall use it more in future.

To judge of the habits and wants of Ferns generally, we would require to know under what condition each species is found growing in its native country; but such information is not always available. We have been assured, however, by one who has spent thirty years in Australia and Tasmania, and who has collected both seeds and plants in nearly every settled district in these countries, that he never found any plants, Ferns or others, growing in peat, and that he never even saw peat in all his travels throughout Australia. These facts he gave us while looking at his old acquaintances in our hothouses, and he afterwards showed us numbers of plants for which peat is recommended by cultivators in this country, that he had himself raised from seed in common soil from out of his vegetable garden, only sifted to free it from stones. We need not, however, go further than our own woods and fields to learn a lesson in Fern culture. Peat composts are recommended for hardy as well as exotic Ferns; but how do we find these situated under natural conditions? For our own part we have found very many of our native species growing under different conditions as regards soil, but we have found few growing in peat through preference, except the mountain Fern Allosorus crispus, and a few others which we have seen growing on the hills in Scotland. The common Brake is also sometimes found growing in a half-peaty soil, but oftener in loam, in which it attains its greatest size. All the other and shade-loving kinds, except such as prefer to grow on walls and rocks, like the Asplenium Ruta-muraria and others, seem

to delight in a good strong soil, enriched on its surface by the leaves which fall annually from the trees—some preferring a moist and some a dry bottom, but always growing with the utmost vigour. The Royal Fern (Osmunda regalis), for which the author before referred to recommends a spongy peat, grows and flowers luxuriantly in a dry loam, but grows the tallest perhaps when it is moist, as we have seen it in the Isle of Man and elsewhere, but not in peat. As with our native Ferns, so also with exotic kinds, probably our strong-growing and shade-loving stove and greenhouse species are found growing for the most part in the rich surface-deposit of the woods with a stratum of loam below, conditions which should be imitated as far as possible in artificial culture. It is not going too far to state, perhaps, that our old practice in regard to composts is founded upon rather arbitrary rules. It might be worth while, for example, to inquire whether it is necessary to use so much peat for some subjects, and so much loam for others, and whether it would not be better in many cases to dispense with either the one or the other altogether. Take the Daphne, for instance, for which peat principally has been recommended, particularly in the case of the delightfully fragrant D. indica, which we have seen growing and flowering in perfection in an almost pure, red loam. For most of the New Holland plants, such as the Acacia and the Epacris, peat and loam, or peat alone, is recommended; but on what authority? Our Australian friend, before mentioned, says he never saw them growing in peat, but complains of the inroads made upon his garden ground by the roots of his Acacia hedges. Peat of a healthy kind is a good root-producer, and a preserver of the roots in some respects, but it is not so nourishing as leaf-mould. The use of either for mixing in composts of which the staple requires to be loam should always be regulated by the character of the latter. Some heavy loams require lightening considerably with peat or leaf-mould, or both, but neither will compensate for the want of sand, which is in itself almost sufficient to reduce the most tenacious loam to an open, friable state, such as it needs to be for potting purposes, and for loam-loving plants it is better to use it for this purpose than too much of the peat. Light loams, on the other hand, want little or no additions, especially if they be open and fibry; and they are excellent for Pelargoniums, Fuchsias, and many greenhouse or stove plants which delight in a soil of a naturally open and healthy texture.

Tropical Forests in England.—Mr. Gardner, in a recent science lecture at South Kensington, on "The Tropical Forests of Hampshire," said England at the present time has a climate far from tropical, but the time specially alluded to was when the Palm and Spice plants flourished here; and when the climate may rightly be spoken of as tropical, not in a poetical or metaphorical sense, but actually. The data on which our inferences are based are the fossil leaves which we find in the clays of the south of Hampshire. It is the middle fresh-water series which is so rich in the clay beds containing fossil leaves. These leaves are found in various conditions of preservation. In most cases the impressions only of the leaves in the clay are met with, but in some cases they are so well preserved that the actual substance has been retained although chemical changes have altered its composition, and it will peel off and blow away. Among others, the following fossil forms were mentioned as having been determined with but little doubt:—Feather and Fan Palms, Dryandras, Aroids, Cactus, Stenocarpus, and plants of the Pea tribe, together with many others. After mentioning that in the two lower fresh-water series there are no animal remains but what have been blown in, among them insect wings and the earliest known English feather, the lecturer went on to speak of the physical conditions under which he supposes the beds were formed. He said that he regarded a river flowing west to east as having deposited all these beds in a valley of from seven to ten miles, which it had made, and showed a picture of the restoration of what he supposed the view was like. The foreground of the picture was made up of plants from Mrs. J. E. Gardner's conservatory, being the nearest known living representatives of the fossil plants.

Cut Flowers.—A German journal recommends for the preservation of cut flowers, almost indefinitely, singly or in bouquets, that they be dipped in a solution of pure albumen, and, after allowing them to become perfectly dry, that the operation be repeated several times, each time with fresh albumen.

PLATE LI.

THE FIRE-BUSH (EMBOTHRIUM COCCINEUM).

Drawn by Mrs. DUFFIELD.

Amongst shrubs or low trees this is one of the most remarkable and interesting subjects yet introduced. It is remarkable on account of its great beauty and profusion of brilliant bloom, and from the fact that, though a South American plant, it thrives well in the south of England and Ireland. It is interesting from the fact that it is a member of the great and mainly Australian family Proteaceæ, a type of vegetation which we seldom have an opportunity of seeing in the open air, and which is never more brilliantly represented in the greenhouse than it is by this plant in the open air in England and Ireland. We have had during the present year branches of it clustered with splendid blossoms from Mr. Luscombe, Combe Royal, Kingsbridge, South Devon; from Mr. W. E. Gumbleton, Belgrove, near Queenstown; and from Messrs. Lucombe, Pince, & Co., of Exeter. From these the specimens were selected from which Mrs. Duffield drew the plate for The Garden. It, however, is only fair to add that some specimens were so densely laden with large clusters of blossoms, that it was impossible to represent them in colour, and so

Buds, style, and fully expanded flower (natural size) of Embothrium coccineum, showing anthers at the spoon-shaped ends of the petals, one of which is enlarged.

more lightly-laden branchlets were selected for that purpose. It is probable that by choosing warm and well-drained sites this shrub could be grown in less favoured districts than those in which it now flourishes so well. It is found to thrive freely in the neighbourhood of Cherbourg, and to bloom and ripen seed there. One reason for its comparative neglect, is the difficulty attending propagation. Mr. Burbidge informs us that the best way of increasing it, when seeds are unobtainable, is by grafting bits of the branchlets on portions of its own roots. It was originally introduced into cultivation by Messrs. Veitch, of Chelsea, from whom no doubt plants may be obtained.

Mr. Luscombe writes to us as follows respecting this Embothrium:—I may remark that, with other smaller plants that have not bloomed, I have at Combe Royal two large specimens more than 20 ft. high, which generally are spectacles of wondrous beauty in the end of April and beginning of May. No one looking at the very faithful delineation of the flowers in the plate, can, however, form an idea of the gorgeous mass of flame which the trees often present. They cannot be termed quite hardy, as a spring frost will sometimes cut off nearly all the flower-buds. This was the case a year or two ago, but the following spring being genial, the unexhausted strength of the trees was manifested in one of them in such a prodigality of continuous bloom as was never produced before. So fine a sight I think was never seen elsewhere in England, though I believe in Cornwall the plant grows freely. One of

THE FIRE [illegible]

mine was from a large specimen which grew in the nursery of Messrs. Veitch in Exeter, and was killed by a frost of unusual severity.

Major Trevor Clarke, writing from Welton Place, Daventry, says:—The only specimen of Embothrium coccineum that I have seen grows in a very remarkable and beautiful valley arboretum, near Lyme Regis. It forms a slender, small tree, but I cannot now recollect the dimensions. It flowers regularly, and ripens seed. In the same spot are many rare, tender shrubs, to say nothing of a small grove of Camellias. One of the largest examples of the Embothrium that I hear of is in Cornwall, at Tregullo, the seat of Lady Williams, and another at her son's house, at Scorrier, in the same neighbourhood. I may add, that near Lyme Regis there is a Myrtle bush, whose short stem measures 1 yard in circumference, with several branching arms, each about 1 ft. in girth. I need not say the climate in almost Mediterranean in character.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. DENNING.

December 18.—Putting Cypripedium spectabile in a large pan in Sphagnum, peat, and sand, and placing it in a cold house, keeping it wet. *Planting*—Souvenir de la Malmaison Roses in front of Orchid-houses for autumn flowers, also Box hedge for shelter. *Miscellaneous*—Putting in more forcing materials, including plants for cut flowers, and Sweet Briers and Roses for stands; putting some Mignonette into first Peach-house to get it into flower; arranging Orchids in flower for effect; beginning to place Pelargoniums in their flowering-pots, using a compost consisting of loam, manure, and sand, and stopping them; putting a few Fuchsias into heat for cuttings; beginning to paint Peach trees in orchard-house; fumigating second Peach-house in case green fly should be lurking in it; mulching all young fruit trees with manure; wheeling garden refuse heap on to Vine border; getting tan in all pits where required; trenching; getting up manure for another Mushroom-bed; pruning Vines in second Muscat-house; looking over Pelargonium pits and picking off damaged foliage; raising first Peach-house to 55° at night and 60° during the day fire-heat, and to 85° or 90° sun-heat, with abundance of air; if very cold at night, the temperature may be somewhat lower. Plants ready for house decoration:—Roman and other Hyacinths, Narcissi, Heliotropes, Tulips, Primulas, Carnations, Scented-leaved Pelargoniums, Fuchsias, Bouvardias, Poinsettias, Mignonette, Schizostylis, Rhododendrons, Rhodoras, Lily of the Valley, Callas, and Gardenia flowers; beginning to clear up Mint, Horseradish, and other beds.

Dec. 19.—*Planting*—Seakale to produce seed next year; bringing out of Seakale shed some Hyacinths which are pushing freely, and plunging them in pot Vinery. *Miscellaneous*—Putting in Deutzia gracilis, Anne Boleyn Pinks, and fancy Pelargoniums to force; putting Endive under cover, and ashes over Peas to protect from birds.

Dec. 20.—Forking over in a shallow manner Raspberry ground; putting Lilium auratum into peat and sand; planting Stephanotis in loam and peat; getting Fig trees into heat, 58° at night, and 63° by day, and plunging them; putting in more Mint and Balm to force; putting into heat Roses, Pinks, Cyclamens, and Heliotropes. *Miscellaneous*—Looking over Cattleyas for scale; giving the second crop of Asparagus a good watering; pruning and cleaning among Roses used for distillation.

Dec. 21. — Inserting Fuchsia cuttings; putting in Dielytra to force, and a fourth batch of Asparagus. *Miscellaneous*—Tying up Yew trees, Cedars, &c., in order that snow shall not break them down; finishing, painting, and tying orchard-house trees; beginning to prepare third Peach-house for forcing.

Dec. 22.—*Potting* off late-sown Calceolarias, also Canterbury Bell and Cucumber plants; putting a few white-flowered Pelargoniums into more heat, in order to induce them to open purer in colour; shifting herbaceous Calceolarias. *Miscellaneous*—Putting litter over Parsnips, Seakale, Artichokes, Celery, Carrots, &c., in order to be able to get them up during frost; sponging Palms and Orange trees; emptying a pit and refilling it for Potatoes; putting manure on Asparagus beds; spawning, soiling, and covering with hay the third mushroom bed; thinning Mignonette and Nemophila.

Dec. 23.—*Potting* Isolepis gracilis for drawing-room decoration, also Vallotas in peat and loam, and Dendrochilum filiforme in peat fibre and Moss; placing in Peach-house Daphne indica to force; putting in also more Seakale and Rhubarb for the same purpose; placing mats over hand-glass Cauliflowers during severe frost; extra-strawing Lettuces and Calceolarias, and also Vine borders; fumigating Lycastes and Stanhopeas to kill thrips and fly; examining Orchids in little baskets twice a week to see if water be needed, those in large baskets once a week, and Phalænopsis every day, watering those in pots at intervals of from seven to fourteen days; putting ashes over Chervil seed.

Greenhouses.

In cases where flowering plants have to be introduced among the general collection it will now be necessary to exercise the utmost vigilance to keep them from damping. In order to guard against this as much as possible, whatever watering is requisite should be done if possible during a bright clear morning, in order that any super-abundant moisture there may be in the atmosphere can be expelled before closing the ventilators; lately, however, there has not been a drying influence in the atmosphere, and what air is admitted comes in laden with moisture, which, if shut in the house, soon condenses, and causes irreparable injury to delicate blooms. While such a state of the weather prevails, moderate fires should be kept during the day; and if at the same time sashes be kept slightly open, damp will not effect a lodgment.

Primulas.—Any of these now coming into flower should have light, airy positions assigned to them, and, if possible, be placed where they can enjoy a temperature varying from 45° to 55°, in which they will be found to succeed admirably. It generally occurs where many of these are grown, that some among them show decided superiority over others, either in size of bloom, colour, or substance, or all combined; and, when this is the case, the plants should be set apart for the purpose of saving seed. To enable them to set their pods freely, artificial fertilization is necessary, and this may readily be accomplished by means of a fine camel's-hair brush; but to perform this operation properly a slit should be made in the tube of the flower to get at the stigma, when, if fresh shades of colour be desired, the pollen from others must be employed. Plants for seeding purposes should be ranged in dry, warm houses, on shelves close up to the glass, where they can have plenty of light and air, otherwise they do not set freely. Clear, weak liquid manure will now be of the greatest assistance in helping them to push forward a fine head of bloom; but, whenever this or water is given, care should be taken not to wet the hearts of the plants, or allow any to lodge on the axils of the leaves, for when that takes place it is sure to cause canker, and ultimate decay. Any Primulas for late blooming should at once receive their final shift, using for the purpose a light rich soil, such as loam and leaf-mould in about equal proportions. In order to keep the plants in an erect position, and steady them in their pots, it is often necessary to use some kind of support, and nothing answers the purpose better than pieces of small twigs, about 3 in. long, thrust in triangularly around their sides, as when so placed they are both neat and effective.

Mignonette.—This is never more prized than during the dull months of winter, but to have it really in perfection at this season it must be stood where it can receive every ray of light and plenty of fresh, sweet air to keep it from drawing. Any that may be growing in pits should therefore be placed on raised stages as near to the glass as possible without actually touching it, and so arranged that there may be sufficient room between for each plant to be quite clear of the other. The best plan, however, for Mignonette is on shelves near the tops of light houses, in which position it obtains all the light available, and comes stocky and strong. Where it is desired to have extra large specimens of this popular sweet-scented flower ready later on, a few of the best plants should now be shifted into other pots a size or two larger, and any lateral or other shoots that may evince a tendency to bloom should have their points nipped out to induce them to break again. The pots used for the purpose should be well drained, and a handful of soot scattered over the crocks, which treatment will be found to keep them clear of worms, and has a very stimulating effect on the growth of the plants, just at the time that they most require such assistance, besides imparting a rich, deep green colour to the foliage. Mignonette delights in good, fibry loam, to which some sweet, mild, decomposed manure has been added, and in potting this should be made as firm as possible by pressing it well down. Whatever support is requisite should be given by using neat stakes, such as the trimmings of Privet, which, when dried, come in most usefully for purposes of this kind.

Calceolarias of the herbaceous section will now require close attention to keep them steadily growing on by shifting into larger pots before they get a check from becoming root-bound. The soil best suited for them is a mixture of about two-thirds fibry loam to one of leaf-soil, with just sufficient sand added to keep it open and

porous, that water, of which they require large supplies, may pass freely through. No place suits them better than low, damp pits, where they are continually surrounded with a moist atmosphere, and if the temperature can be maintained slightly above 45°, their growth from this time will be most rapid. The next best situation to a moist pit or frame is on the shelves of a warm greenhouse, but here they will require an occasional syringing to keep them healthy and vigorous.

Cinerarias.—Plants of these raised from seed sown early last spring ought now to be coming into bloom, and should be liberally assisted with liquid manure whenever they require water at the roots. This will be found of greater service to any that are getting in a forward state than shifting them into larger pots, for when they have formed their flower-stems fresh soil is but of little benefit to them. Although very impatient of much artificial heat, they will bear slight forcing, and where it is desired to get a portion of the stock in earlier, they should be placed in any Vinery or Peach-house now at work, or where similar atmospheric conditions and warmth can be afforded them. Cinerarias are so subject to green fly that it is always advisable as a precautionary measure to give them a slight fumigation before they come into bloom, as then any of these pests that may be lurking amongst the foliage will be got rid of before any damage is effected. The potting of any intended for late blooming should be no longer deferred, as when they are at all pinched for root room, their growth is at once checked, and they are thrown prematurely into flower, the heads of which, when that is the case, never attain half their usual size or development. Cinerarias delight in a light, rich soil, such as loam and leaf-mould in about equal proportions, and they should be potted somewhat loosely. To grow them really well they must receive plenty of atmospheric moisture, which may be afforded by growing them in pits or small, damp houses, where the floor can be constantly saturated with water.

Eupatoriums.—Now that Chrysanthemums are all but over, Eupatoriums will come in most serviceably to supply their place; and although not very showy in themselves, they blend well with the brilliant colours of Salvias, Sericographis, Schizostylis, and others of that class that now form the principal ornaments among greenhouse plants. E. Weinmannianum is by far the best for flowering at this season, as it comes into bloom without the aid of artificial heat, and, being sweet-scented, is doubly valuable. Those who are so fortunate as to have a good stock of this useful plant will have no difficulty in producing a very pleasing effect by freely introducing it among others of brilliant colour; and as it is nearly hardy, it can be used in positions where more tender subjects would suffer. Both this and E. riparium are fond of plenty of water, which should be administered to them almost daily, or if in very small pots, they are benefited by being placed in bottom pans to catch what drains from them.

Browallia elata.—For associating with the Eupatorium there is nothing half so charming as well-grown specimens of Browallia elata, the lovely pale blue flowers of which form one of the choicest bits of colouring it is possible to have. Those who have not made the acquaintance of this as a winter and spring-blooming plant for supplying cut flowers and decorating warm greenhouses should lose no time in obtaining a packet of seed and sow it at once in gentle heat, when if grown freely on it will come in by March or April, and be most valuable either for cutting or for grouping with Deutzias, Spiræas, Lily of the Valley, or any other light flowers. Just now it is one of the most telling subjects we have if associated with Eupatoriums, Chrysanthemum frutescens, and other pale blooms, but to have it in good condition at this season the temperature of the house in which it is growing should not go below 50°. Plants raised now should be carefully nursed in cool-stove heat in light, airy positions on shelves close up to the glass to keep them from drawing. The best way is to grow them three in a pot, as then they make fine bold masses, but very beautiful little specimens may be had singly, and are quite large enough for ordinary purposes. The Browallia elata likes a rich, free, open soil and plenty of water, and when flowering should receive a good supply of liquid manure, in order to keep the leaves of a healthy green colour. To obtain vigorous, strong subjects for blooming next winter, seed should be sown in June or July and the plants grown in an open position outdoors till the end of September, when it will be time to get them housed. Although such fragile-looking flowers, I find they are very enduring in a cut state, as they will last quite fresh from a week to ten days, which renders them of great value for working into bouquets.

Epacrises, Heaths, &c.—Where these have to be introduced into warm conservatories or greenhouses, they should have the most favourable situations allotted to them, and be so arranged that they may have the full benefit of what air is admitted. Although the free-blooming kinds that come in naturally at this season will endure a little warmth for a time, they do not succeed well in a dry, heated air, such as is given off from hot-water pipes during frosty weather; and therefore in arranging them they should be kept as far away from such desecrating influence as possible, or their beauty will be but of short duration. The soil in which Heaths and Epacrises are grown, from being compressed so firmly, often becomes almost impervious to moisture, especially towards the middle, where, if once they become thoroughly dry, it is a difficult matter to get water to penetrate. In order to prevent plants suffering in this way, it is advisable to examine them carefully several times to make sure that they are thoroughly soaked, as few pots hold sufficient water at one application to wet the whole of the soil. Slow-growing, hard-leaved Heaths, such as those belonging to the aristata section, should have abundance of air on all favourable occasions, but this should now be given principally at the roof of the house to avoid cold, cutting draughts. The exceeding mildness of the recent weather, attended with such a damp atmosphere, has been particularly favourable to the spread of mildew, and unless this is watched and destroyed directly it makes its appearance, the health of any plant affected by it quickly suffers. There is no better known remedy for this troublesome pest than dry flowers of sulphur, the best time for the operation of which is early in the morning, or during a rainy day, as then the plants are naturally damp, and in a more favourable state for the sulphur to adhere and complete its work. Before applying it, any plant affected should be laid on its side to prevent the sulphur from falling on the soil, as when that takes place it has a very injurious effect on the roots. In dusting them over, see that every leaf is covered. After the lapse of a week or so the whole may again be washed off by using a syringe and clean water, but before this latter operation, the plants should again be laid on their sides.—J. Sheppard, *Woolverstone Park.*

Orchids.

It was at one time considered necessary that Orchids should be plunged in bottom-heat, but experience has taught us that such a course is the reverse of beneficial to the plants, and consequently the practice has been discontinued. A few of the strong-growing terrestrial varieties will bear bottom-heat while growing, but even these, if not removed immediately after growth is finished, rapidly fall into ill health. The chief reason why bottom-heat should not be used for Orchids is that it causes the plants to make growth too rapidly, such growth being weak and drawn on account of air not being allowed to circulate freely amongst the plants. The growth being made in too short a time entails a disproportionately long season of rest, and plants so treated soon perish. The heat from hot-water pipes or tanks covered over with any material in which plants are generally plunged, is particularly injurious in Orchid-houses during the winter, because it causes excessive moisture, which condensing, falls back on the plants and greatly injures them. These remarks are necessary, as there are many growers of small collections of Orchids who have not had a house especially built for their plants, but who have placed them in any warm house available, regardless as to the way in which it is heated. Those who have an Orchid-house in which there is a bed for bottom-heat, will do well to shut the heat off the bed, and rely on the uncovered hot-water pipes as a means of keeping up the temperature. Those who have but few Orchids, and the only house available being one with bottom-heat which cannot be dispensed with, should place their Orchids on shelves, or suspend them as near the glass or possible. Much mischief is often done by the practice of raising moisture by syringing the hot-water pipes in Orchid houses, and the hotter the pipes the greater the injury. Syringing the pipes raises a dense, hot vapour, which, disappearing in a few minutes, leaves the atmosphere as dry as ever, and such rapid changes do great mischief. Moisture, in proportion to the temperature, is requisite in almost all warm houses, and this is best secured by having some of the hot-water pipes fitted with troughs to hold water; by this means the evaporation is never excessive, and the heat of the pipes regulates the amount of moisture given off. Those who have tanks with hot-water pipes running through them should, at this season, either shut off the heat from the pipes, or by means of a valve so reduce the temperature that but little moisture is given off by the water.—James O'Brien.

Kitchen Garden.

Owing to the heavy rainfall which we are experiencing, even the naturally driest soils will not now be workable, at least it will not be advisable to dig or trench them until they are in a somewhat drier state. In the meantime, however, all compost heaps may be turned, rubbish heaps cleared away, and manure and soil carted into convenient spots, ready for being wheeled on to the ground whenever the weather is frosty; ditches may also be cleaned out, and drains put in order, and leaves raked up and stacked for heating purposes or made into compost; old leaf heaps may likewise be turned and

sprinkled with salt, soot, or lime during the operation, an application which not only kills slugs but adds to the manurial properties of the mould. Gravel, lime, chalk, and fuel should now be carted, and indeed all work that can be advanced should be forwarded, for as soon as fine weather sets in trenching and digging will require attention from all hands in order to bring up arrears. There has been plenty of opportunity for examining root-stems, so I need say nothing about these further than that all decaying matter should be instantly removed. Seed Potatoes should be laid singly on shelves, and should be kept as cool as possible, provided they are frost-proof. As soon as the ground is fit to be worked some of the early Ashleaf kinds may be planted on a sheltered border that can easily be protected should occasion require; start the sets for this purpose at once in shallow boxes or pieces of turf, and when transferred to the open ground cover them to a depth of 8 in. Broccoli will require frequent looking over, protecting the heads by bending the foliage over them, covering them with Bracken, or lifting the plants and placing them under cover. Veitch's Autumn Giant Cauliflower is still in fine condition, and Snow's Broccoli is just coming into use, so that with timely attention to successional sowings, there need now be no difficulty in maintaining a supply of one or the other all the year round. Saladings in frames should be freely exposed to the atmosphere whenever the weather is favourable, and if slugs be troublesome, scatter lime, soot, dry ashes, or bran about freely; so long as any of these remain they will not touch the vegetables, and may be caught and destroyed. Hotbeds of leaves and litter should now be prepared for sowing early Carrots and Radishes, both of which do well sown together, as the Radishes come off before they are in any way detrimental to the Carrots. Early French Horn is the best kind to sow, and of Radishes, Wood's Early Frame. Rhubarb for a successional supply should be got in to force, also Seakale and Asparagus. French Beans will also require to be sown fortnightly, in order to keep up a continuous supply. Guard against red spider attacking the plants by never allowing either them or the atmosphere to get dry. Keep up a supply of small saladings and herbs in the manner recommended in former calendars.—W. Wildsmith, *Heckfield.*

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Chrysanthemums.—I should recommend amateurs who are about to make their first attempt in pot-plant growing to take Chrysanthemums in hand in preference to all others. They have several properties that make them more suitable for beginners than most subjects, not the least of which is their coming in at a dull time of the year when there is little else in flower; the blooms stand long in a cut state, and when the most suitable kinds are selected, and the plants not grown too large, or spoilt by over-training, they are appropriate for room decoration, where they will last for several weeks, and for which purpose their bright colours make them very attractive. They are especially suited for small gardens near towns, where the atmosphere is very frequently of such a nature as to interfere with the cultivation of more delicate subjects. They are very readily struck, and are easily managed through the subsequent stages of their growth. Neither do they suffer to the same extent as most plants by an excess or scarcity of water, a kind of treatment in which those amateurs with but little experience are so liable to err—not that they are by any means indifferent to careful and attentive treatment, as is evident by the exceptionally fine condition in which they are frequently seen. With some their propagation is deferred until spring, but those that are struck from cuttings put in at the present time get their wood more fully matured, and consequently are in a condition to produce better flowers than the softer-grown, late-struck examples; I have also noticed that the late-struck plants were more liable to the attacks of mildew, no doubt owing to the softer state of the leaves. Select for cuttings, if procurable, the sucker-shoots that spring from the base of the old plants in preference to side-shoots from the hard wood, which latter never grow so freely or make such good plants; they should be taken off when about 3 in. or 4 in. long, although the tops of the longer ones will answer the purpose, but are not so good. Remove two or three of the bottom leaves, cut them just below a joint, and insert them singly in 3-in. pots, with two or three pieces of crock in the bottom of each; ordinary loam with one-fourth sand and a sixth of sifted leaf-mould will be found to suit them admirably. As they are essentially water-loving subjects they must never be allowed to want for it from the first day the cuttings are put in through each stage of their existence; moisten the soil as soon as the cuttings are put in; do not use bottom-heat or any heat at all, as it tends to draw them up weakly. If a few good-sized common slates be placed on the front shelf of a greenhouse or in a Vinery, with 1 in. or 2 in. of sand or fine ashes on the top kept moist, and the little pots placed on this and covered with bell or hand-glasses, all they will require is the soil to be kept moist, together with a very small quantity of air for an hour or two in the daytime to dry the leaves if they show any signs of damping. Do not give any air if they do not exhibit any signs of mouldiness; should this take place, remove at once such as are affected. They will root in a couple of months, when the glasses can be dispensed with; in this way they will be strong and short-jointed, making little top growth until they have got plenty of roots very different from the weakly, drawn-up, newly-struck plants often seen, the bottom leaves of which are so thin and soft, as to make it impossible to preserve them through the summer, which is one of the causes to which is attributable the unsightly naked stems so often noticeable in these plants. No one needs to hesitate attempting the growth of Chrysanthemums on account of insufficient means. I have seen beautifully-managed, profusely-flowered plants struck and grown by those who had neither greenhouse nor frames, not even so much as a hand-light, by simply plunging each little pot containing a cutting into another pot 6 in. in diameter, filled with soil, and covering each with a tumbler, standing them in the window of an ordinary living room, in which they were kept until the middle of April, when they were put in larger pots and plunged under a south wall for a few weeks, after which they were placed in a more open situation. The varieties that produce the largest flowers are far from being the best adapted for amateurs, especially the kinds with incurved petals, as these largest-flowered sorts, even cultivated in the best possible manner, will not produce one-fourth the number of fully-developed blooms that the recurved kinds will. Some of the smaller incurved varieties are unsurpassed, the white Mrs. George Rundle and Mr. George Glenny, straw-coloured, a sport from the last-named variety, have all the properties to render them deserving of general cultivation. Julie Lagravère, dark velvety crimson; Cardinal Antonelli, salmon red; Annie Salter, yellow, tipped with pink; and Hermine, blush, a free flowerer, may be classed as old kinds: but where only a select lot is grown, they are what I should choose as the most useful medium-sized sorts for pots. The Pompone varieties are extremely free in flowering, and serviceable for cutting or general decorative purposes; the three forms of Cedo Nulli, white, yellow, and lilac, are all good; these, with Aurora Borealis, brown; Salamon, rose-crimson; and Mrs. Dix are six admirable kinds. Some of the true Anemone-flowered sorts, as also the Japanese varieties, are handsome and much admired by some people, but discarded by others for the somewhat ragged appearance of the flowers. I should not recommend any one to grow them without having first seen them.

Vines.—Now that the leaves are off and the fruit cut, the Vines should be pruned, especially if in a house where pot plants are wintered under them, as when divested of their shoots they will admit more light to the plants. It is also better to get such work done now than defer it till later on, when sometimes the pruning gets put off from time to time until bleeding occurs, when the sap begins to move, which, even if it does not take place to such an extent as to exhibit its effects in the worst form, still has a weakening tendency. It is also advisable to give the Vines their winter dressing, for with amateurs it rarely happens that red spider does not make its appearance more or less, in which case, although the mature insects are in all probability dead, still they will have deposited their eggs on the bark, ready to come to life as soon as there is sufficient warmth to bring them to maturity. The spur system of growing Vines is undoubtedly the best, particularly for amateurs. Do not prune too closely, especially if there be any doubts about the wood being sufficiently ripe, but of this there is much less danger after such a warm summer as the last. Leave to each spur a couple of eyes, severing the shoot ¾ in. beyond the leading eye. If, when they push, the lowest eye shows as good a bunch as the leading one, then the latter can be removed, if not, the leading shoot can be left; hence the advantage of the double chance accruing from the retention of two eyes. As soon as they are pruned they should be dressed with the usual mixture, prepared by mixing clay and water to the consistency of thick paint, to each quart of which put a handful of soot, and 2 oz. of flowers of sulphur, stirring the whole well together, and adding more water if required. With this mixture paint the Vines well, especially the crevices of the old wood; before applying it, however, examine them, and strip off any loose bark that may be likely to afford a hiding-place for the eggs, but do not by any means resort to the barbarous treatment of scraping until little is left but the living bark. It is not necessary to condemn this practice any further than to point to the fact that Vines which are so treated never succeed in forming canes of the same vigour and strength as those which are allowed to carry more of the old bark. When this treatment of the Vines is finished, they should be tied to the wires lengthways in as little room as they can be made to occupy across

the lower part of the roof, where they can remain until the buds are about breaking. Before this is done, the whole of the woodwork, including shelves and stages, should be well scrubbed with soap and water, and the glass also washed, finishing off by syringing freely with warm water, and lime-washing the brickwork.

Peaches and Nectarines under glass should also now be pruned. In the management of these fruits amateurs are often tempted to leave too much bearing wood, under the impression that the quantity of fruit will be proportionate; yet that is a very great mistake, for both size and quality will, from this cause, be inferior, through the insufficiency of room for the full development of the leaves, which, for want of the requisite amount of light on them, are thin and weak. The young wood for bearing during the ensuing season is, from the same cause, prevented from attaining the strength or ever getting so well ripened as if it had had more room allotted to it. After the trees are pruned they may be dressed over with a similar mixture to that recommended for Vines. If anything be added, such as Gishurst Compound, which is recommended by some, or even to be used for dressing alone, be very careful that it is not too strong. I have frequently seen this material used at the ordinary strength advocated by its admirers, and the result has been a wholesale destruction of the flower-buds, which have fallen off in showers just before they should have opened. In 1 gallon of the mixture 3 oz. will tend to soften the dressing, and so penetrate the cracks of the bark more effectually, and, especially if the trees have been much affected with red spider, will be an assistance in destroying the eggs. It will be as well, as soon as the mixture is quite dry on the trees, to tie at once in their places such as are grown on trellises, having first washed and brushed the latter with hot water and soap. Nail up those on the back walls after these are lime-washed.

FLORAL DECORATIONS FOR DECEMBER.

December is regarded by the decorator as the first month of a new floral year. Following the most poverty-stricken month of the twelve, every fresh flower which makes its appearance is received with a welcome such as that which we bestow upon an intimate friend whom we have not seen for a long time. Perhaps we are too hard upon November in abusing it for the scarcity of its blossoms; it is not so much that the variety to be then had is small, as that what there is then obtainable can (with one exception) be got all the year round, and this makes us esteem them less highly than we ought to do, and than the flowers deserve. Everyone knows the pleasure afforded by the first Violet or the first Primrose found in spring. Much the same feeling pervades the floral decorator at the sight of the first forced blooms of Roman Hyacinth, Lily of the Valley, and Paper Narcissus, which begin to flower in December. The brilliant Poinsettia now makes its first appearance, and is exceedingly effective in flat decorations, or where its gorgeous bracts can be used below the line of sight, for it loses half its beauty if you have to look up at it. Few scarlets are more rich and intense than the Salvia gesneræflora, which now commences its long course of flowering; its worst point is its perversity in shedding its blossoms, which must be prevented by gumming the corolla into the calyx. Though this entails considerable trouble and patience, the result amply repays the decorator for the time spent upon it. The plants hitherto alluded to require heat to produce them in perfection, but there are many hardier plants which would well reward the cultivator for growing, or it may be for only flowering, them under glass, just to preserve their blossoms from the destructive influences of wind, rain, and frost. Of these, Christmas Roses, Crassula lactea, and Portugal Laurel may be mentioned as examples. I regret being again unable to refer to any blue flower as being now obtainable. Of other colours the following may be had:—

Purple.—Heliotrope, Violet.

Mauve.—Cyclamen, Heath, Stokesia.

Pink.—Begonia, Bouvardia, Camellia, Chinese Primrose, Chrysanthemum, Cyclamen, Epiphyllum, Fancy Pelargonium, Fuchsia, Rose, Zonal Pelargonium.

Crimson.—Bouvardia, Camellia, Carnation, Cyclamen, Epiphyllum, Fuchsia, Lapageria, Rose.

Scarlet.—Bouvardia, Carnation, Epiphyllum, Euphorbia, Poinsettia, Salvia, Zonal Pelargonium; also berries of Holly, Solanum, Rivina, Cotoneaster, and Cratægus Pyracantha; seeds of the common Fetid Iris; and fruits of the Arbutus.

Orange.—Abutilon, Carnation, Chrysanthemum, Rose.

Yellow.—Allamanda, Chrysanthemum, Rose.

White.—Abutilon, Arbutus, Azalea, Begonia, Bouvardia, Camellia, Carnation, Chinese Primrose, Chrysanthemum, Crassula, Cyclamen, Eucharis, Fancy Pelargonium, Gardenia, Lilac, Lily of the Valley, Paper Narcissus, Portugal Laurel, Roman Hyacinth, Rose, Spiræa, Stephanotis, Tuberose. W. T. T.

THE INDOOR GARDEN.

CYCLAMENS AND THEIR CULTURE.

A well-managed group of Cyclamens was at one time rarely met with, but since their culture has become better understood they form one of the foremost attractions at our early winter and spring floral exhibitions, and are held in the highest estimation in the metropolitan flower markets. Any one possessing a warm pit or greenhouse may grow Cyclamens, and even in sitting-rooms they last in bloom a considerable length of time provided they are not under the influence of gas. Seeds of them may be sown from September to December in well-drained pots or pans filled with light, fibrous loam, to which has been added a liberal quantity of decomposed leaf-mould and sharp sand. Some growers soak their seed in water before sowing it, with a view to hasten germination, which it does to some degree, but newly-saved seed is seldom so hard and dry as to require such treatment. After sowing the pans or pots should be placed in a warm temperature, but in such a position as to require little water in order to keep the soil in a moist condition. A sheet of glass placed over the soil and covered with Moss is a great help in keeping the seed moist and thereby hastening germination. This should, however, be removed immediately the seedlings are found to be pushing through the soil. When large enough to handle the seedlings should be pricked off, an inch or so apart, in pots filled with similar soil. As they advance in growth and become well rooted they should be potted off singly into 4-in. pots, shifting them on when the roots touch the sides of the pots, and before they become pot-bound. When shifted into their flowering-pots, soil of a stiffer character should be used, and should be firmly pressed round the roots. In potting the bulbs should be kept at least halfway out of the soil so as to admit of the flowers and foliage coming up cleanly without fear of damping off, as was so often the case when the old plan of burying the bulbs was practised. Some growers recommend cow manure mixed with the soil for Cyclamen culture, but it is very productive of worms and grubs, which soon become injurious to the plants. Mr. Wiggins, of Isleworth, a well-known Cyclamen grower, recommends two-year-old rotted turf and good leaf-mould in equal quantities, with a liberal admixture of silver sand. If the loam be deficient in fibre a little peat may be used. Some finely broken charcoal added to the soil is excellent for keeping it open and sweet. Very large bulbs are often obtained in a short space of time by planting the seedlings out in the open ground in June, they having been previously hardened off in cold pits. A north border is the best position in which to plant them out. The ground should be well dug and thoroughly well pulverised, and heavily dressed with rotten manure and plenty of rough sand. Avoid planting them too deeply; keep at least three parts of the bulb well above the surface. This manure dressing provides a cool and rich bottom, which is so congenial to the Cyclamen during the hot summer months. A good watering once a week during dry weather and a sprinkling with a fine rose or syringe once a day to keep down insect-pests is all the attention they will now require. In the middle of August take them up with a fair amount of soil attached, put them in 6-in. pots, and remove them to a pit, paying due attention to watering, shading, &c., until they become again established. By the middle or end of September the pots will be found to be full of roots, when they may be placed in the greenhouse. Good flowering bulbs may easily be obtained in fifteen months, and some contend that they may be grown in much less time, but really good plants require at least a year from the time they are pricked out from the seed-pans. When the plants are in bloom as little fire-heat as possible should be employed, and they should be kept dry by having abundance of air admitted to them. Stakes and ties are unnecessary to well-grown plants, and when used only diminish the beauty of the plant by giving it a stiff and formal appearance. It was formerly the practice to dry off the bulbs of Cyclamens after blooming, but now it is seldom done by good cultivators. Cyclamens, as well as other plants, require a season of rest, and unless this be allowed, satisfactory results must not be expected; but there is a great difference in resting

a plant and drying up all its vitality. After blooming, the plants should be placed in a cool frame or pit, where abundance of air can be admitted, and during fine weather the sashes may be entirely removed. Water should be applied in sufficient quantity to the roots, to keep the foliage from flagging, and frequent fumigating and syringing the foliage are necessary to keep down insects, for unless this be attended to the leaves will fall off prematurely, and the flowering capacity of the bulbs will thereby be impaired. Most of the plants will shed their foliage, but those that do not will continue to grow throughout the season, and are the earliest to bloom. As soon as the bulbs are beginning to push fresh growth, they should be taken out of the pots, the soil reduced from their roots, and re-potted in smaller pots than those from which they were taken, shifting them into larger ones as becomes necessary. Over-potting, as well as too much feeding, has a tendency to promote foliage at the expense of bloom, and should therefore be guarded against. During the growing season, and indeed at all times, the closer Cyclamens are kept to the glass the better they flower, the more healthy is the foliage, and the stockier the plants. Direct sunshine breeds red spider on the foliage, therefore a little shade should be afforded them, either by material over the glass, or by placing the plants in a sunless part of the house or pit in which they are grown. Should the plants be found to be in the least infested by insects, means should at once be taken to put a stop to them, persevering until the foliage is entirely free. Dipping the heads of the plants in soap and water has been found to be a good method of keeping insects in check, and if this be repeated now and then, and a free use of the syringe maintained, cleanliness may generally be insured. More effectual means will sometimes have to be employed, but too powerful remedies should at all times be avoided. In order to have Cyclamens of the first order a continual though slight artificial heat, and a free circulation of air are necessary, in order to dispel that damp and stagnant atmosphere so much dreaded by Cyclamen growers—indeed, upon this success mainly depends; and where artificial heat cannot be applied, it is better to subject the plants to a low temperature than to keep sashes closed day and night, with a view to maintaining the highest one possible without the aid of artificial heat. Liquid manure is often applied to the roots of a Cyclamen, and when the aim is to obtain large bulbs as soon as possible it is no doubt a good plan, but as a rule it is unnecessary, pure soft water being the most appropriate application. When plants are very much pot-bound, and just showing bloom, a supply of weak guano water will then be beneficial in assisting the blooms to expand, otherwise it should be withheld. In saving seed it is not advisable to leave more than four, or at the most six, pods on each plant, unless they are unusually strong and vigorous, for, if too many be left the pods will be but small, and the seeds consequently inferior to what they would be were a more limited number left. It is a common practice, especially amongst amateurs, to leave as many seed-pods on a plant as they can get, and to this may be attributed the many disappointments they frequently experience in raising plants; and, moreover, bulbs that are allowed to ripen too many seeds frequently die or produce but very little bloom the following season. The seed usually ripens in July and August. The best time to fertilize the blossoms of the Cyclamen is during the early part of the month of March, but it may be done as late as April. The later it is done, however, the less the chance of obtaining the desired result, as all flowering plants are more or less fertilized by the agency of insects during the late spring and summer months, and the access of any of these to the flowers may upset all calculations of the operator. Crossing should be done when the sun shines, and the first business is to select the parent flowers. The pollen parent should possess undoubted good qualities that it is desirable to transmit to the progeny—such as large blossoms, fine-shaped or vividly coloured flowers. The operator should take hold of the stem between the thumb and forefinger of the left hand, just below the flower, with the thumb-nail of the right hand rap against the side of the bloom, and the pollen will be found lodged on the thumb-nail of the left hand. The seed parent should possess a good habit of growth and well-marked foliage; these qualities are indispensable, and the pollen should be applied to the blossoms, fertilizing not more than six, which are ample to produce seed. S.

Calamus Imperatrice Marie.

A ROYAL PALM.

(CALAMUS IMPERATRICE MARIE).

This belongs to a group of Palms which are characterized by the midribs of their pinnate leaves being continued far beyond the terminal pinnæ, these thong-like prolongations being formidably armed with recurved fishhook-like spines. The plant in question is one which is slender in habit, half climbing, in fact; and as these hooked cords fix themselves firmly to adjacent vegetation, they serve as stays to keep the plants

steady during high winds. One or two nearly-allied species may be seen growing in house No. 1, and in the Palm-house at Kew, and their graceful appearance and distinct mode of growth render them desirable as decorative plants in Palm-stoves or warm conservatories. During the summer months they may be plunged in the open ground on sheltered parts of the lawn and with excellent effect. B.

CULTURE OF EUCHARIS AMAZONICA.

This grand Lily, which ranks among the very foremost of stove plants, seems to be very accommodating in its habits as regards culture, though doubtless there is a right and a wrong way of growing it. Some succeed in getting the same plants to flower nearly all the year, by giving them liberal treatment and a constantly high temperature, while others aim only at having them in flower during the autumn and winter, at which periods this Lily is one of the best flowering plants which we possess. No doubt its perpetual blooming disposition is fostered by the removal of the flower-stalks as soon as the flowers are over, and before they go to seed, for it does seed freely—a fact which encourages the belief that the plant in its native habitat has a regular flowering season, after which it seeds, and probably then goes to partial rest; but under artificial culture it has been treated in very different ways, and more or less successfully. We have known the plants to be grown in 6-in. or 7-in. pots for special purposes, and in a high temperature during the summer, but without bottom-heat, after which they were rested for some six weeks in a perfectly cold house, and then introduced to the stove, where they flowered about Christmas, but not so well as they would have done under more favourable circumstances; in fact, the resting of the plants in a cold house is a mistake. They may flower in spite of such treatment, but not in consequence of it. Where there is an abundance of well-matured plants, and it is not desired to have them all in flower at the same time, a portion of them may be retarded for succession by keeping them in a rather warm greenhouse or intermediate-house; but if they be subjected to a lower temperature than this for any length of time the foliage becomes yellow, and sometimes damps off, and the plants are permanently injured. The leaves should always be green and healthy. Plants thrive well in an ordinary stove temperature if shaded from bright sunshine in summer. If potted in February or March they will begin flowering in August, and continue to throw up blossom spikes for several months. We saw some fine plants lately in a nursery which had been grown in this way; they had not been potted for two years, and, though they were only in 8-in. or 9-in. pots each plant had about one dozen good spikes, with a quantity of flowers to each, upon it. They were for sale at 3 guineas each plant. The surest way, however, to produce good specimens and plenty of fine flowers is to grow them in bottom-heat—for a time, at least. Where a regular succession of flower has to be kept up, the roots should be potted and plunged at intervals of a month or so, and the period may be still further extended by the retarding process before mentioned after the plants are lifted out of the hotbed. Should they be pot-bound, they should be shaken out, separated, and re-potted in good soil, placing the bulbs together somewhat thickly, and keeping the largest ones by themselves. They should then be plunged immediately in a bottom-heat of 75° or 80°, and heated to a high and moist temperature. Growth will be rapid, and in about three months or a little more they will show flower, when they may be transferred to the stove or intermediate-house. Plants that are not re-potted should be top-dressed liberally, and the bulbs must be rather deeply covered. The best compost for them is turfy loam well chopped up, and leaf-mould and sand, about two-thirds of loam to one of leaf-mould and sand, according as the loam is heavy or light. Frequent waterings with liquid manure will greatly benefit the plants during their season of growth, and they must at all times have plenty of water, and be shaded from strong sunshine. J. S. W.

Wintering Musas.—These have of late years come to be extensively used during summer in our public parks for adorning the sub-tropical garden, but in private establishments they are seldom met with even where sub-tropical gardening is attempted. This may probably arise from the difficulties often experienced in preserving them through the winter. In the London parks Musas are often plunged in the ground in their pots during the summer, especially the smaller-sized plants, but the larger ones are usually planted out. When they are lifted for the season, those in pots are stored away in houses, like other plants in pots, but the larger ones are lifted with comparatively small balls and placed on shelves in houses where a temperature of not less than 45° is maintained. Here they are laid on their sides, their leaves being kept closely together, and thus they are allowed to remain throughout the winter, a mat being merely thrown over their roots. In February the roots are examined, and they are planted in trenches and subjected to an increased temperature, where they soon form new roots and begin to grow afresh. In June, after being gradually hardened by exposure to air, their leaves are tied up, and the plants are lifted with as good balls as possible, and planted out in their summer quarters.—J. N.

The Sweet Potato as a House Climber.—The Sweet Potato Vine is a rapid grower in a dwelling-house, and much more delicate in appearance under house culture than when growing out-of-doors. Select (according to the "American Garden," the earlier the better) a well-ripened tuber of the Red Nansemond variety 8 in. or 10 in. long, and 4 in. or 5 in. in diameter. A dark-coloured Hyacinth glass is a suitable and pretty holder for the Potato, but a common glass fruit or small earthenware jar will do. Fill the vessel with rain-water, and place the tuber in the mouth of it, allowing only 2 in. or 3 in. of the Potato to go down into the water. Set it in a warm bright place to sprout, filling up the holder with water as fast as it evaporates. Probably a great many shoots will start at once or in quick succession; break off all but three or four of these, as your plant will by so doing be much longer and more luxuriant. Nothing will now be needed for the health of the plant, except to keep the vessel filled with rain-water.

Winter Window Gardens.—In city or country some one sunny window in every house may be "a thing of beauty and a joy for ever," with more or less outlay of money and labour, as the occupant may feel disposed. A bay window is of course better adapted for plants than an ordinary one, but either should first be provided with a plain deal box the length of the window, from 2 ft. to 4 ft. wide, and at least 6 in. deep. Have holes bored in the bottom, and place upon it 1 in. of broken pottery, charcoal, and pebbles, to insure drainage. Fill with rich, friable soil, and in it plunge the pots of Pelargoniums, Fuchsias, Heliotropes, &c.; then plant Lycopodiums, Sedums, Musk, or Linaria Cymbalaria along the edge, and soon the, whole surface will become a mass of various shades of green. From the upper part of the window-frame may depend various baskets and hanging vases, filled with bright-leaved plants for centre pieces, and trailing over the sides may be placed Ipomœas, Ivy-leaved Geraniums, yellow Gazanias, and Mesembryanthemums; Ferns, such as Maiden-hair, are also all appropriate for this purpose. A bay window may be beautifully arranged as a grotto, with a deep, rough box filled with earth and rocks, piled up and grouped in picturesque confusion, with Ferns, trailing plants, Mosses, &c., planted in the recesses and hanging in long, graceful festoons from the rocky projections. Trellises of Cedar with the bark remaining are suitable for such a window, and tubs planted with Ivy, Virginian Creeper, Cobæa scandens, climbing Roses, or other climbers placed on each side of the window, and trained in an arch over it form a beautiful frame for such a sylvan picture, and are easily cared for. According to the "Germantown Telegraph," what may be termed suitable hanging-baskets for woodland windows of this kind might be made of Cocoa-nut shells, wooden bowls, covered with Pine cones or gnarled twigs and roots, or boxes made by placing mossy sticks, one crossing the other, until of the desired height, then fastening with nails to a square board with holes in each corner for cords, and filled in with Moss between the logs.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Ericas and Water.—In all the erroneous matter published on plant-cultivation, probably nothing has been so conducive to the death of plants as the delusive writings on "over-watering." As an illustration of this it may be mentioned that very great loss—many thousands of plants—has occurred in some of the London nurseries among the stock of young Heaths, owing to ineffective watering.—V.

Propagating Dracænas.—Having a front shelf over hot-water pipes covered with Cocoa-nut fibre to a depth of 4 in., in which to plunge small pots of Ferns, I put in between the pots, and directly in the fibre, a number of cuttings, pieces of both stems and tops of Dracænas, and every one of them rooted in ten days' time. Of course the bottom-heat is intense, and—for the sake of the Ferns—the fibre is kept very moist.—W. W. H.

Acacia lophantha.—This free-growing greenhouse Acacia may be readily propagated either by means of seed or cuttings, and, apart from its beautiful yellow flowers, its leaves are exceedingly graceful in form, and nearly as useful as those of a Maiden-hair Fern for mixing with cut flowers. It succeeds perfectly in a mixture of loam, peat, and sand; and, although it grows best in a bed or border, it thrives satisfactorily in a large pot.—G. Derby.

Ficus minima.—This small form of the well-known Ficus repens is useful for furnishing small corners and nooks where larger-growing kinds would be inadmissible. Its foliage, which is very small indeed, clings closely to any moist wall or woodwork, and may be allowed to grow for a considerable time before it assumes a thick, heavy appearance. A plant of it covers a damp wall in one of Messrs. Lee's plant-houses at Hammersmith.—S.

THE KITCHEN GARDEN.

CULTURE AND FORCING OF ASPARAGUS.

No vegetable is so universally esteemed as forced Asparagus, especially when it can be placed on the table at Christmas, and this can be easily done wherever there is the convenience of a hot-water pit, or even an ordinary garden frame, although the flavour and quality of what is obtained from the latter will not bear comparison with that grown where it can be accommodated with a top-heat of about 55° at night, ranging between that and 65° during the daytime, according to the state of the weather. To get Asparagus ready for cutting towards the end of December, no time should be lost in preparing the hotbed, so as to have the material intended for its formation well sweated and sweetened by fermentation before putting it together in the pit or frame, otherwise it will be apt to heat so violently as to destroy the roots of the plants placed on it. The best and most lasting material for affording the necessary bottom-heat is a mixture of manure and leaves in the proportion of about two-thirds of the latter to one of the former. These should be turned over together and well mixed during the operation, after which they should be allowed to lay a few days till they begin to get hot, and then they should be shaken over again to permit the rank steam to escape. If this be repeated two or three times the mixture will be ready for use, and should then be placed in the pit and gently trodden down to prevent it from settling. This done, the next thing is to shake over it some half-rotten leaves or light vegetable soil to the depth of 6 in., on which to place the Asparagus. Having thus prepared the bed, the plants should be carefully dug up, so as to preserve as many of the large fleshy roots as possible. This can be best accomplished by using a steel fork, the sharp tines of which can be thrust between without causing any injury. During the process of digging work out as much of the soil from amongst the roots as will come away freely, or the bulk will be so large as to be difficult to lift, besides which it will occupy too much room in the frame without being of the least use to the plants. Care should be taken in handling these so as not to bruise or injure the crowns, or many of the large, prominent heads will be broken off, or so damaged as to spoil them for use. By packing them in closely a great number of roots may be got in a two-light pit or frame, which will afford at least a couple of gatherings each week for two months or more if kept properly supplied with water. When putting the plants on the hot-bed use fine, rich, vegetable soil for working in amongst their roots, which should be done in such a manner as to fill every space thoroughly up that no cavities exist among them, or they cannot do well. When properly covered with soil to the depth of an inch or so over the crowns give a gentle watering, and keep the lights shut close till the young heads of Asparagus begin to make their appearance, when air must be given on all favourable occasions, or the Asparagus will not have its proper flavour. When fairly through the soil the top-heat, as before observed, should range between 55° and 65°, which is quite hot enough to grow it as it should be. It is the fashion in France to have the Asparagus blanched both when forced and grown in the open ground, but in that state it never has the true flavour, and is not in any way to be compared with what is subjected to plenty of light and air so as to get it of a good green colour. That the French beat us in the size of what they cultivate cannot be denied, but the flavour of French Asparagus, according to my judgment, is very inferior, added to which, only just the top of the shoot is eatable, so that altogether their practice of covering it up to keep it from the light is not to be commended. My idea of really first-class Asparagus is that it should be perfectly green, and from 4 in. to 6 in. of it tender and eatable, and when in that state the flavour and quality are sure to be all that can possibly be desired. In order to get the plants to push up as many heads as they are capable of producing, they should be kept properly supplied with tepid water, and if a handful of salt be added to each four gallons of water used, the strength and flavour of the Asparagus will be much improved.

One great disadvantage in forcing Asparagus is that it destroys the beds to do it, as the plants are of little or no use to plant out again, and it takes at least three years from the time of sowing the seed to get them sufficiently strong for cutting or to take up to be forced. To prevent such a sacrifice of established plants, it is the practice of some to force it in the beds; this is done by having them rather wider apart than usual, so as to allow of the soil being dug out between. In this space fermenting material, similar to that used for making a hot-bed, is placed, and the beds are then covered with wooden shutters or old lights to protect them from the cold, and afford shelter for the tender heads of Asparagus when they emerge through the soil. Such a mode of forcing is all very well if it be not desired to cut till March or April, but for early Asparagus it is quite out of the question, as the requisite amount of top-heat could not be maintained unless the weather should happen to be unusually favourable. Those who would like to try the system should dig out the soil between the beds to the depth of about 2 ft. 6 in., and the same in width, and fill in the trench so made with properly fermented manure and leaves, adding to the same whenever requisite to keep up the declining heat. Where this system is practised it is best to have a short bed, as then the linings of manure and leaves are put to the best use, and made the most of by having beds on each side of it, by which means the whole body of soil is thoroughly warmed through. Beds forced in this way may be made to last a lifetime if not cut at too long to weaken them beyond what they can recover again during the growing season. In all cases where this mode of forcing is followed, the manure and leaves used between the beds for affording the requisite heat should remain undisturbed during the entire summer and autumn, and indeed till such time as they are started again the following year, as by so doing it affords the plants plenty of rich material to feed on, and of which they are not slow in availing themselves, as will be apparent if examined after it has been in a few months. While on the subject of Asparagus, it may be of use to say a few words as to the proper management of beds at this season, the time having arrived to take them in hand. The tops of the plants being now thoroughly ripe and no longer of service to the roots, should be cut off close to the soil and laid in some convenient place to be burnt, after which the ashes should be scattered over the beds, having previously cleared them of weeds, which ought to be burnt at the same time if sufficiently dry, and if not, placed on the rubbish-heap to rot, when they can be mixed up with others and any spare compost for future use. It is still the practice with many to dig out the soil between the beds, and lay it on the top of them, thinking, no doubt, to protect the plants from the severity of winter, which is a needless task, seeing that Asparagus is as hardy as a Dock, and does not require any protection whatever. Besides being needless, the plan of digging out the alleys between the beds is positively injurious, as it annually destroys many of the strongest and best feeding roots the plants have, for they are sure to make their way into the rich soil laying between. Instead of digging this out, it is much better to give both beds and alleys between a heavy coat of manure, and this should be done at once, so that it may have the whole of the winter to act upon it, as then the frosts will so disintegrate it as to cause it to crumble and be in a thoroughly sweet pulverized state by the time the Asparagus begins to grow in the spring, and every rain that falls meantime will be carrying the rich juices down, enriching the soil for the benefit of the plants. For applying at this season of the year, there is nothing better than good farm-yard manure, such as is made by pigs, bullocks, or any other well-fed stock. Salt, guano, and soot form a powerful fertilizer, highly congenial to the growth of Asparagus, as indeed it is for most garden and field crops, but for neither of which is it so much used as its merits deserve. In the case of Asparagus, however, it is best to apply it in spring after cutting has ceased, as salt is not suited to plants while their roots are in a state of inactivity. Those who contemplate the formation of new beds in the spring should set about preparing the ground by getting it trenched and heavily manured, throwing it up rough as the operation proceeds, that it may be fully exposed to the ameliorating and mellowing influence of the frosts of winter, and what is brought about by the action of the atmosphere. In trenching, the soil should be broken up to the depth of from 2 ft. to 3 ft., and plenty of manure

mixed in regularly as the work proceeds. Should the soil be heavy or of a retentive nature, then add a good quantity of leaf-soil and sand to assist in keeping it open and porous. Near the coast, where Seaweed can be obtained in abundance, that may be largely added with the manure, and worked in at the same time, as Asparagus delights in a dressing of decomposing vegetable matter that is impregnated with salt. The planting of the beds, time of doing so, and general treatment must be reserved for a future paper.

S. W. P.

Pea Growing in Trenches.—The following method of growing Peas may not perhaps be altogether without interest, especially in neighbourhoods in which a cold climate and a dry, light soil exists, and where little water can be applied during the summer:—Dig a trench, and in this trench lay a good coating of manure; this is then dug into the trench and levelled with the spade. The Peas are then put in one by one, at about 2½ in. apart, the row being the width of the spade; this is rather tedious, but well repays the labour. They are then covered with sifted ashes, and over that the leeward side of the trench is drawn over, covering the Peas about 3 in. They are thus protected by the ridge until high enough to have sticks, and all through the winter's frost and snow the plants never bleach or wither, and they grow vigorously afterwards, and produce well-filled pods of Peas when those sown otherwise and treated in the ordinary way are comparatively worthless.—A.

Gas Lime as a Manure.—Is the lime used in purifying gas of value as a manure for an old garden or lawn? How should it be applied?—F. F. [The lime used in purifying gas is considered good material for improving cold, heavy land, and it has the effect of killing wireworm and other insects. Four tons to the acre is the quantity usually applied. In some cases it is dug in as soon as it is put on the land; in others, left during the winter, but in all cases it should be spread immediately, for if allowed to remain in heaps, nothing will grow where they have been for some time. It cannot be used with safety as a surface-dressing; it would, therefore, certainly be unadvisable to employ it on a lawn. It might be used in old garden ground, but it must not be put near the roots of fruit trees in its fresh state.]

The Jerusalem Artichoke in Cottage Gardens.—"X. Y. Z." (see p. 536) thinks this Artichoke unsuitable for cottagers, owing to the waste caused in peeling, arising from its uneven surface; the truth is, I suppose, the Jerusalem Artichoke may, as regards the majority of small households, be looked upon in the light of a newly introduced plant, so little is it known; and the taste for such articles of food must be acquired before they become popular. Probably if some calamity worse even than the disease were to overtake the Potato, this Artichoke would again come into favour, as it was before the Potato was introduced; and it is in view of this, or rather that we may be prepared for any exigency that I would advise cottagers to give it a fair trial, and try to acquire a taste for it as an article of food, either in the shape of soup, or boiled plain, like Potatoes. Its great recommendation is its productiveness under almost any conditions; and the certainty of always having a crop superior as regards bulk to the Potato grown under the same conditions. I have hitherto said nothing about its value to the stock farmer, but, judging from its analysis, it should be superior to the Turnips or most other roots grown for feeding purposes. At any rate it is worth a trial for cattle feeding, as the expenses of culture would be small. There is, of course, as your correspondent justly remarks, a waste in preparing it for cooking, which, as far as I can see, cannot be avoided; but where the cottager keeps a pig all waste matters of the kind are utilised in another form, so that nothing really is lost. When they are taken up some care should be exercised, as every bit left in the ground will grow.—E. Hobday.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Tan and its Uses.—To what advantageous use can tan be put in a garden? [Fresh tan is one of the best materials for supplying bottom-heat to plants in pots plunged in it; but spent tan is almost worthless in a garden, except it be to mix in heavy, clay lands; and even then the advantage gained is probably not worth the risk of introducing numerous insects that are often found in old tan.]

Tomato Farming.—For several years we have furnished Messrs. Hall & Co., of Frederica, Delaware, with Hathaway's Tomato seed in surprisingly large quantities. That firm has, perhaps, the most extensive canning establishment in the country. The seed with which we furnish them each year, allowing only one-half to make bearing plants, produces enough to cover more than 2000 acres. These growers wrote to us that one day last autumn they picked 6400 bushels of this Tomato.—James Vick & Co., *Rochester, N.Y.*

IMPRESSIONS OF FRUITS.

Pomologists who wish to retain an accurate knowledge of the forms and appearances of the numerous sorts of fruits under cultivation, find it important to preserve outlines showing their sizes and figures. It has been a common way to make these outlines by first cutting the fruit through the centre from stem to apex, laying the flat side on paper, and then with a finely-pointed pencil to trace the outline carefully in contact with the halved fruit. This is somewhat troublesome and not very accurate, and we ("Albany Country Gentleman") have accordingly adopted a simpler and more perfect mode, which thirty years' testing has proved all that can be desired. The mode is simply the following:—First cut the fruit accurately through the centre with a sharp, thick-bladed knife, splitting first the eye and then cutting down and splitting the stem. By a little practice this is done without difficulty or failure. The appearance presented is like that in fig. 1. Then with a pen or camel's-hair pencil, touch

Fig. 1.

lightly the exterior of the cut face with ink, including the stem, to which the ink should be applied more heavily. Then press the whole face on a sheet of thick unglazed or blotting paper, taking care that every part comes in contact with it, and pressing the stem down firmly; then remove it, and a perfect outline will be left. The moisture of the fruit will dilute the ink on its cut face, and a soft, distinct impression will be made (fig. 2), much resembling a neatly shaded picture, if carefully done. A little practice will enable any one possessing a moderate share of skill to make very satisfactory impressions. Pears which are ripe and melting will have too much water on the cut surface, unless it be first partly absorbed with a sponge, piece of cotton, or with blotting paper, before the ink is applied; and the fresh picture may need some drying by the same means. In making pictures of Apples, or of any fruits which have deep cavities at the ends, the outline to be complete must be finished by bridging across these cavities with a single pencil line, by using the eye. Fig. 3 exhibits the way in which this is done, the dotted

Fig. 2.

Fig. 3.

lines being those which are added. These lines are often of much importance by way of showing whether the fruit is smooth, even, ribbed, or irregular. More perfect and striking pictures may be made by using coloured inks, to correspond with the colour of the fruit—crimson, orange, yellow, green, and scarlet, according to the particular shading of the skin—and when the fruit has a red cheek on a yellow or green skin, each side of the cut surface may be touched with its peculiar hue. Even the red stripes on Apples may be represented, though imperfectly, by using some care. The easiest way to apply the colours is to procure a few of the softest coloured crayons in the market, and by taking the fruits before they become mellow, the colours may be readily rubbed on the cut edges, for which purpose use the best blotting paper. A good-sized book of blotting paper prepared by the bookbinder may be used for the impressions of all fruits which can be cut through the centre; and such a book, with its yearly additions, will become a volume of much value for reference.

Preserving Ferns in a Green State.—I was lately shown some Fern fronds with the beauty of which I was much struck. Two coats of gum-water had been laid on them with a camel's-hair var-

nish brush, and when thoroughly dry the fronds had been placed separately between two sheets of paper. After a quantity had been thus prepared some large, heavy books were placed upon them for a few days, when they became straight and ready for mounting as specimens, or for decorating picture frames and large mirrors in rooms. Maiden-hair Fern, delicate as it is, can be preserved in this manner. It retains its green colour, and can be used for making bouquets, thus obviating the necessity of using newly-cut fronds on every occasion. Bunches of scarlet hips gathered from the wild Rose in the hedgerows, Pyracanthas, Cotoneaster, Euonymus radicans variegatus, Holly berries with foliage, berry-bearing Aucubas, and many other evergreens, can be preserved in their natural state by the application of gum-water. The hips and scarlet berries retain their bright colours as if newly gathered, and remain plump and firm. For Christmas decorations all kinds of evergreens are much improved in appearance by the application of gum-water, and produce a brilliant effect under gas-light. The Mistletoe with its berries becomes quite attractive after a coating of gum. Wax flowers surrounded with preserved green Fern fronds are very beautiful.—Henry Taylor, *Bedale*.

THE LIBRARY.

LEAVES FROM MY SKETCH BOOK.*

This is a beautifully printed and illustrated book, consisting of a choice selection of pictures from the remarkably rich collection of his own sketches, accumulated by Mr. E. W. Cooke, the well-known painter, during the past forty years. Mr. Cooke is one of the few painters who take a real and practical interest in the art of gardening. In very early life he worked at the small drawings in Loudon's "Encyclopædia of Plants," and therefore we looked through his "Sketch Book" with expectations of finding some interest in our own way, nor were we disappointed. The Palm in the Villa Bonaventura, Rome; the vegetation in the Colonna Gardens, Rome; the stone Pines in the Villa Borghese; the Agave and the rock verdure at Tivoli; the camel laden with Palm branches; the Date Palms on the left bank of the Nile, are all sketches of great merit, which arrest the attention of those interested in the various aspects of vegetation. A selection from Mr. Cooke's immense library of sketches, made with a view to illustrate vegetation specially, could not fail to be both interesting and instructive.

White's Natural History of Selborne.—Messrs. Bickers, of Leicester Square, have just published an excellent edition of this long popular work. It is the standard edition, first edited by Mr. E. T. Bennett, and now revised and edited by Mr. J. E. Harting, whose taste and knowledge eminently fit him for the task. A series of ten recently discovered letters of Gilbert White to Mr. R. Marsham are added to this volume, which contains Bewick's original and various other good illustrations, and is well printed and convenient in form.

Life of a Scotch Naturalist.†—This is an interesting book on the life of a good though a very poor naturalist—Thomas Edward. How this truly working naturalist pursued his favourite study amid poverty and hard work at his trade of shoemaking, is well told in this very well-illustrated volume, which contains a beautiful etching by Rajon, from a portrait of Mr. Edward by Mr. G. Reid. The book is worth having for this alone.

M. Morren's Correspondance Botanique.—A new edition of this has just been issued. It is a directory of all the botanic gardens, professors, curators, and botanists throughout the world, and is a useful aid to horticulturists. It is published at Liège, under the direction of M. Morren.

Stove and Greenhouse Ornamental-leaved Plants.—We have received the second edition of Mr. B. S. Williams' handy volume to which numerous additions of both descriptive text and engravings have been made. It is a good and convenient volume on the culture of tender-foliaged plants, and one, moreover, which will be extremely useful for reference.

* "Leaves from my Sketch Book." By E. W. Cooke, R.A., F.R.S.—London: John Murray.

† "Life of a Scotch Naturalist," By Samuel Smiles, author of "Self Help," &c.; London, John Murray.

THE "GARDENERS' CHRONICLE" AND OUR IRIS ARTICLE.

The "Gardeners' Chronicle" of last Saturday contained the following paragraph:—

We find that a series of descriptive articles, written for us, and at our request, by Mr. Baker, on the known species of Iris, and extending over several numbers, has been reproduced in a condensed form in The Garden of last week without our permission having been obtained. The writer of the article has expressed to us his regret at what we believe to have been an act of inadvertence on his part; but we think that some explanation or apology is due also from the Editor.

Our answer to this is that it is untrue. In pursuance of a plan formed and carried out long before the "Gardeners' Chronicle" began the series of articles to which it refers, we began a series of articles on the most important families of hardy plants, doing all in our power to make them as complete as possible, to bring them up to the level of our present knowledge, in fact. When we began our coloured plates we pursued this plan more successfully—giving with each article on an important family a coloured plate of some new or uncommon species of merit. Having prepared a plate of the fine Iris iberica, we applied to the gentleman (Mr. W. B. Hemsley) we supposed best fitted by his knowledge and opportunities to write the article to accompany it. His article is an original one, and no impartial person comparing the two could say that it was a "condensed form" of Mr. Baker's articles. The only thing they possess in common is the arrangement, which was abundantly acknowledged in The Garden (p. 526). Mr. Baker fully concurred in what Mr. Hemsley did, furnished him with some of his material, and lent him his full list of species. The above unjust and uncalled-for note is in jarring contrast to this fellowship in the innocent work of endeavouring to popularize a beautiful group of hardy plants. Mr. Hemsley would not have done his manifest duty in the matter if he had not brought the knowledge of the subject down to the present time, and surely the best way was to acknowledge Mr. Baker's work rather than profit by it [all have done so who have read it] and ignore it. Apparently the "Gardeners' Chronicle" would prevent us from writing an article on the subject at all. It is hard to satisfy, and try as we may we fear we cannot succeed in pleasing it. We willingly apologize for our existence, but we cannot do so for exercising the right to publish an original article on one of the families of hardy plants, to the culture and advocacy of which The Garden, more than any other journal, has from its commencement been devoted. It will be remembered that Mr. Hemsley's article completed the account of the family, while those in the "Gardeners' Chronicle" were at the time incomplete. The article was sent to us as original, is original, as is the plate that accompanied it, and even its plan of publication as a whole in one number. The "Gardeners' Chronicle" has no more right to question our property in it that it has to question a man's right to walk in the street.

SMALL TOWN CONSERVATORIES.

Living in 1874 in the centre of a Midland town of 70,000 inhabitants, and having a few square yards open at the back, I had a small conservatory of wood and glass erected by a local builder. The first winter, until March 6, 1875, I endeavoured to keep out frost by petroleum lamps; the consequence was that I lost all my Pelargonium leaves, and had nearly everything damaged except Hyacinths. On the date named I had hot-water pipes (heated by gas) put round the place, the stove being inside with a small flue to carry off fumes. The result was marvellous, and I had a fine show of ordinary flowers almost at once. All went well that spring and summer, and at the end of October I got the pipes to work again. My Roman Hyacinths came out on November 18 or 19, and on Christmas Day I had Epacrises, Camellias, Azaleas, Orange bloom, Cyclamens, Fancy Pelargoniums, Arums, Bouvardias, and other plants finely in flower. I must not omit a Maréchal Niel Rose which bloomed directly afterwards. My Azaleas early in the spring were lovely, though I suffered in some respects from having so many different plants all in one temperature—rarely below 56°; I had a quantity of blooms all the summer, which would have been better still had they not received a check in March, when I had a small addition to my house, so as to form a hot and cool department. Some of my plants went to a show

in August, and they were much admired. I have no doubt I should have had some lovely flowers—Pelargoniums and others—now, had I not been offered my present appointment in September. During the removal, and while my greenhouse here was building, my poor plants suffered sorely; still, even without any heat, I have now before me a beautiful pot of Roman Hyacinths which came out on December 2, and I have a few good Pelargoniums and other things out. One Camellia opened its flowers in October; another has bloomed since I came here—early in November; and although the change has occasioned a delay, I hope to have plenty of flowers soon. Now, I dare say numbers of your readers will think little of my efforts, but I am quite sure a great many mere amateurs, who, like myself, manage their flowers entirely themselves, would be glad of as good a show as that described. I am sure people in towns may effect wonders with a gas and hot-water apparatus. I know I miss the gas sorely here, and doubt very much whether even in this very pure air I shall do as much as I did in the town. I only wish I knew of a good plan for keeping a small greenhouse at about 55° or 60° all the winter. Hot-water pipes with boilers and fireplaces demand a man's time, and I wish to do all my greenhouse work myself. Can any of your readers give me any hint herein?

P.

EARLY SPRING FLOWERS.

The following is a fuller list than that published last week (p. 556):

Jasminum nudiflorum	Leucojum venum	Iris reticulata
Forsythia suspensa	L. pulchellum	I. stylosa
F. viridissima	Lonicera fragrantissima	Cyclamen Coum
Galanthus nivalis, single and double	Viburnum tinus	C. vernum
G. plicatus	Cydonia japonica	Primula veris, garden vars.
Rhododendron atrovirens	Borago orientalis	
Hepatica triloba, white	Pulmonaria officinalis	P. marginata
H. t. single and double, blue	P. o. alba	Scilla sibirica
H. t. ditto, red	Erica herbacea	S. bifolia
Crocus susianus	E. codonodes	S. nivalis
C. lagenæphorus	Vinca major	Orobus vernus
C. imperati	V. minor, blue and white	O. cyaneus
C. luteus	Ulex europæus	Arabis lucida
C. l. striatus	Cheiranthus Cheiri	A. albida
C. biflorus	C. double yellow	Potentilla alba
C. b. Parkinsoni	Daphne pontica	Soldanella alpina
C. Sieberi	D. Mezereum	Anemone Hudsoniana
C. vernus, in var.	Ficaria ranunculoides	A. blanda
Mahonia japonica	Hyacinthus orientalis	Sisyrinchium grandiflorum
M. Aquifolium	Helleborus niger	
Aubrietia deltoidea	H. n. major	Saxifraga oppositifolia
A. alpina	H. orientalis	S. o. alba
A. græca	H. atrorubens	S. ciliata
Lonicera reticulata	H. fœtidus	S. orientalis
Viola, in variety	Eranthis hyemalis	Omphalodes verna
Erythronium Dens canis, white and purple	Narcissus pseudo-Narcissus	Kerria japonica pleno
Dondia Epipactis	N. p.-N. pleno	Dentaria digitata
Tussilago fragrans	N. minor	Draba tomentosa
	N. maximus	Corydalis cava alba
	N. white Polyanthus	Schiverckia podolica

E.

Horseradish in Covent Garden.—The salesmen in Covent Garden Market evidently anticipate a large demand for Horseradish, judging by the immense quantities of it which they have lately imported from Holland. Huge heaps of it may now be seen on market mornings, consisting of bundles containing from twenty to twenty-five sticks each, of first-rate quality, tied up with small but strong withies. These bundles arrive packed firmly in large barrels, and in many cases the heads are found to have made a considerable amount of growth on their way, which, of course, is blanched as white as Seakale. The sticks are not washed before being packed, but are placed in the barrels apparently as they are dug from the ground with a quantity of soil adhering to them. It is somewhat remarkable that a crop so easily grown as Horseradish should be sufficiently remunerative to pay for importation, whilst in London market gardens comparatively little of it is grown. The reason of this may probably be that there is only a demand of any importance at certain seasons of the year, December being the principal month in which it is required. It might perhaps, therefore, scarcely do for market gardeners near London, who have to pay such high rents to occupy a very large portion of their ground with such crops as Horseradish, that will not admit of other crops being grown amongst it, and for which the sale is somewhat uncertain. Indeed, only a few salesmen who do business with hotels and similar places can dispose of it in any quantity; and Horseradish being a root that will keep good for a considerable length of time, they can afford to import large quantities of it at a time, and by so doing buy at a much cheaper rate than would remunerate English growers.—S.

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

Will you allow me space to answer one or two questions—Why we canvass the country for one guinea and Patron four-guinea Fellows, instead of trying for Fellows subscribing two guineas. First, because it has now been shown that a great many people interested in gardening will subscribe a guinea, on general principles, to what they believe will be a really useful society, though they live at such a distance from London that they can expect comparatively little direct personal good from it. Secondly, because it is most important that the Society should include as many as possible of the foremost horticulturists of the country of all ranks in full fellowship, and it is a fact that not a few of them of good position, and with considerable influence, have but few guineas to spare, and many calls after those. Thirdly, because the broader basis the Society rests on the better, the difficulty of collecting subscriptions being not very serious—witness the National Rifle Association and Royal Agricultural Society. Fourthly, because there are a considerable number of enthusiastic horticulturists with ample means who are willing to lend a helping hand to the Society, especially under its difficulties of transformation, by subscribing four guineas, for which they will receive a ticket admitting self and friend, and have the right to a second, admitting their head gardener to all the Society's shows. Another question came in these words:—"It has long been my intention to withdraw from the present Society. I am quite willing to join the new Society, or rather to continue my present annual subscription of four guineas, provided all connection with the gardens at Kensington is entirely dissolved. I shall be obliged by your informing me what course you think I had better adopt." The answer to this, and to several other similar questions, was that if the writer had resolved to leave the Society in its present shape, he had better send notice of withdrawal to the Council before the end of the year, with an intimation that if the plan of reconstruction suggested be carried out he would become a Patron four-guinea Fellow. The interest in the guinea Fellowships keeps widening. The last post brought in additional names from Durham, Cornwall, Yorkshire, Pembrokeshire, and Warwickshire.

George F. Wilson.

Horticultural Club.—The annual meeting of this Club was held at the Club House, 4, Adelphi Terrace, on Wednesday evening, and we are happy to say it is in a flourishing condition. A considerable sum was decided to be invested in the Three per cents. Several new members were proposed, and the arrangements made for the comfort of the members were considered excellent. After the meeting the members dined together, the Hon. and Rev. J. T. Boscawen in the chair. The following is the list of the committee for the ensuing year:—Mr. Herbert Adams, Mr. J. T. Bartlett, Dr. Henry Bennett, Mr. William Bull, The Hon. and Rev. J. T. Boscawen, Mr. Albert Christy, Mr. Philip Crowley, Mr. James Cutbush, Mr. George Deal, Dr. John Denny, Dr. Hogg, Canon Hole, Mr. Andrew Henderson, Mr. John Lee, Mr. W. A. Lindsay, Mr. Horace K. Mayer, Mr. Thomas Moore, Dr. Masters, Mr. Charles Noble, Mr. Charles Turner, Mr. Harry J. Veitch, Mr. George F. Wilson, Mr. B. S. Williams, and Mr. Maurice Young. Secretary, Rev. H. H. Dombrain, Westwell Vicarage, Ashford, Kent.

OBITUARY.

We have to announce with regret the death of Mr. John Ingram, of the firm of Wood & Ingram, Huntingdon. He died on the 10th inst., aged fifty-four years.

NOTES AND QUESTIONS—VARIOUS.

Tree at Nice.—In reply to "Enquirer" (see p. 556), allow me to say that the tree at Nice to which he alludes is, I imagine, Phytolacca dioica.—S. E. F., 81, *Rue de Fréjus, Cannes.*

Hardy Climbers for Basket Handles (see p. 519).—I should try dwarf-growing variegated Ivies, variegated Honeysuckle, or Periwinkle, all of which can be trained into any shape.—J. F.

Seeds of Good King Henry.—As your correspondent (see p. 542) when speaking of Chenopodium Bonus Henricus, states that seeds of it cannot be purchased from the seedsmen, allow me to say that I have had seeds of it from Messrs. F. & A. Dickson, of Chester, and I may add that it grows well from seed.—W. B., *West Derby, Liverpool.*

Culture of Iris iberica.—I grow a collection of Irises, most of which do remarkably well, but I. iberica is one that I cannot manage. I have never succeeded in blooming it, as it invariably dwindles away. Perhaps some of your readers will kindly inform me what treatment it requires.—J. Whittaker, *Derby.*

Jacob's Ladder (Polemonium cœruleum) British.—Mr. Niven having (see p. 506) expressed a doubt as to whether P. cœruleum is a true native or not, allow me to say that it is certainly wild in Derbyshire, and very abundant in the valley of the Wye and the neighbourhood of Buxton. The variegated form of it is one of the most beautiful plants with which I am acquainted, the variegation being decided and very constant. What a splendid acquisition P. confertum will be if it prove easy of cultivation!—J. Whittaker, *Derby.*

Thuja Lobbi.—There are two good specimens of this Arbor-vitæ in the pleasure grounds at Ossington Hall. They are both about 20 ft. in height, and proportionately thick and bushy. They were planted in a very small state in 1862, and I am not aware that there are any finer plants of the kind in the country at the present time.—H. [We fancy there are many higher specimens than these in the country.]

No. 266.] SATURDAY, DECEMBER 23, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

LONDON FLORICULTURE.

PLANT-growing in London is generally considered so very difficult, that the number of gardeners of which our city can boast is probably very few; and yet there is, perhaps, no place where the science of horticulture can be more advantageously prosecuted, or where a man could make himself a better gardener. The very difficulties increase the satisfaction resulting from success; and the disadvantages under which plant-growing in London is carried on not only render more care and attention necessary on the part of the cultivator, but necessitate the keenest observation, so that he may detect the first indications of deteriorating health in the objects of his care. But while I must admit that it is far more difficult to grow plants in the heart of London than in the suburbs, or even in Regent's Park, I feel sure that few have any idea of the degree of success that may be attained even by one who has everything to learn, but who thinks it worth while to work steadily for a year or two. Any one who has a good warm cellar may grow Dutch bulbs really well. He may have pots of Snowdrops, Crocuses, Narcissi, Squills, Tulips, Hyacinths, and many more to his heart's content, and his country friends will not find his spring flowers very far behind their own. Moreover, our London flowers, though rather slow to reach perfection, last for a considerable time. A good Van Thol Tulip brought up in the smoke will light up a dull room for three weeks or more. Indeed, the difference in lasting power between plants reared on the spot and those brought from the country to London is something surprising. I am now admiring one of my Vallotas which flowered in June last and threw up a second flower-stem in October. The first flower of the head was fully expanded on November 22, and the last is out, but has not yet begun to fade (December 19), although the plant has been removed from a cool greenhouse into a warm room for several hours nearly every day. A Christmas Rose is just expanding on a plant that has been in London for over two years, and by protecting it from heavy rains by a glass shade, at the same time allowing air free access, I have no doubt it will retain its beauty and its cleanliness until Christmas is passed, in spite of fogs, and more than an average quantity of smoke. I had several plants of Lilium auratum and speciosum (white and red) in good flower during the summer and autumn. One of the last was in perfection for more than a month, and from the look of the bulbs I believe they will flower again next year. Both Lilies produced seed-vessels. But, in case any one inclined to try his hand at London gardening, should be deterred by the fear of failure, let him take courage from the fact that bunches of Black Hamburgh Grapes grown by Dr. Trouncer, in Mount Street, Grosvenor Square, gained prizes at the Royal Horticultural Society, and at the Royal Botanic Society, Regent's Park, and let him not forget the wonderful Chrysanthemums yearly grown in the Temple Gardens. Although there are of course many plants that we cannot grow on from year to year in the smoke, the number that makes way is very considerable, and includes many hardy out-of-door, window, greenhouse, and hothouse plants, Ferns, and Orchids. If those who have met with fair success would send short notes to THE GARDEN, as I hope to do from time to time, it would be a gain to all who are gardening under the same disadvantages, and would tend to diffuse more widely the natural taste for flowers, and foster a highly desirable form of culture, beneficial in a thousand ways.

A LONDONER.

LUCULIA GRATISSIMA AT DRUMLANRIG.—A specimen of this splendid winter-flowering plant on the back wall of a Camellia-house at Drumlanrig has been in flower for the last six weeks, and has borne eighty-eight trusses of its charmingly sweet and beautiful blossoms. It is scarcely possible to conceive a more attractive flower in a cut state than this. The wonder is that it is not more generally cultivated than it is, considering how easily it is grown. As a rule, it has been ruined by subjecting it to too much heat. The temperature of a Camellia-house where no fire-heat is applied, except a little when the Camellias are making their growth and to keep out frost, suits the Luculia admirably. As to soil, it is not particular, provided it be open and moderately rich.—Q.

SOPHRONITIS GRANDIFLORA ON STUMPS OF TREE FERNS.—Dead Tree Fern trunks cut up into different lengths are used in a variety of ways in the London nurseries. They are sometimes furnished with surface-rooting Ferns and Lycopods, but few plants appear to thrive so well on them as the scarlet-flowered Sophronitis. Several pieces of dead stumps suspended from the roof of one of the houses in Messrs. Veitch's nursery are now clothed with this brilliant-flowered Orchid.—S.

TWO HARDY, FINE-FOLIAGED PLANTS.—In a border of hardy flowers two somewhat uncommon plants are now noticeable for the beauty of their foliage. One is the silvery Convolvulus Cneorum, which in summer is adorned with unassuming rosy flowers, and whose foliage gains in winter an additional lustre; the other is the Heuchera lucida, with leaves the size and shape of those of a Zonal Pelargonium, in colour a rich velvety bistre and olive. Both are very useful for cutting at all seasons of the year, as their broken and subdued tints set off the brighter colours of flowers to advantage.—SALMONICEPS.

THE SCARLET FRITILLARY (F. recurva).—This seems to be as variable as many American Lilies are. The plants of it which I grew here reached 2½ ft. in height, and had eight flowers on a stem. When the shoot appears above ground it is of a dark maroon colour, becoming afterwards nearly black, and by the time the plant is in flower the leaves have attained a dark blackish-green colour. Both foliage and flowers are coated with a very delicate glaucous hue. It is a plant the growth of which excites much interest because it is constantly changing and growing very rapidly. It is not, however, an easy plant to grow to perfection, but when my specimens shall have bloomed satisfactorily in May next, I shall be ready to publish my experience; I had nearly lost this Fritillary by overlooking one of its requirements, but now I have again several hundred plants of it.—MAX LEICHTLIN, *Baden-Baden.*

CATTLEYA MARGINATA AT CLAPTON.—Several hundred plants of this charming Orchid are now flowering freely in Messrs. Low's nursery at Clapton. They are growing in small wooden baskets and on strips of wood arranged on narrow shelves one above the other, a position in which they are exceedingly effective, their richly-coloured flowers peeping out from amongst their stiff, green foliage, and white, fleshy roots. Associated with these is a new variety of Cattleya of recent introduction, which will probably be named C. Dayi. It resembles C. marginata, except that its flowers are quite distinct, being much darker and richer in colour than those of that species. They are also rather larger and are produced in greater abundance—qualities that cannot fail to be appreciated.—J. P.

SCARCITY OF HOLLY BERRIES.—Mr. McNab read the following note on this subject the other evening before the Botanical Society of Edinburgh:—The scarcity of Holly berries this year on the trees round Edinburgh is somewhat remarkable, inasmuch as for many years past most of the trees have been richly covered with them. Notwithstanding the number of trees now cultivated in the Edinburgh Botanic Garden—all sufficiently matured to be fruit bearing—only a few are this year to be seen with berries on them, and even in the case of those now producing clusters of fruits the latter are small and scanty. On many specimens a few solitary berries only are to be seen. As to the cause of the scarcity this year, I am not prepared to answer. The Holly generally flowers during the months of April, May, and June, and whether the temperature last April, which was on thirteen mornings at or below the freezing point, indicating in all 69°, (being 20° more than has been experienced during any month of April since 1855), or the drought which followed the flowering had anything to do with the matter, I am unable to say, nor am I aware that the scarcity is general all over the country, but as far as I have yet been able to ascertain, it is the case in the three Lothians. Yew berries this year have been produced in unusual abundance. During the snowstorm which occurred early in November the Yew berries were greedily eaten by the birds, the seeds being rejected and the pulp only retained. At that time few Holly berries were observed to be meddled with, not being sufficiently ripe. Several Holly trees in the Botanic Garden which produced no berries last year, although they yielded fruit abundantly on previous occasions, are also barren again this year, a circumstance which I hardly would have expected, unless occasioned by one or other of the above causes—in all probability by the former.

NOTES OF THE WEEK.

Calanthe Veitchi at Drumlanrig.—There are at Drumlanrig just now some examples of this fine hybrid Orchid, with bulbs 1 ft. high, and spikes of bloom, each bearing from forty to fifty fully expanded blossoms. This Calanthe should be grown wherever there is a demand for winter flowers.—J. N.

Paris and its Exhibition of 1878.—Spades are trumps again in Paris, just as much as in the days of Hausmann under the Empire. The shovel and the pickaxe are seen everywhere clearing away rubbish to charm the eyes of the visitors to the Great Exhibition of 1878, which the French hope will surpass all its predecessors. It is to be desired that the Horticultural Committee will arrange for at least one good show, and not waste their energies on a series of small hows as in 1867.

Phalænopsis at Clapton.—The Phalænopsis-house in Messrs. Low's nursery at Clapton, to which we directed attention some weeks back, is now a grand sight, hundreds of plants of these lovely Orchids being now in blossom, and thousands of buds as yet unexpanded. Owing to the long period of sunless weather which we have lately experienced the blooms do not open so rapidly as usual, but in a few weeks' time, if warm sunny weather should set in, an improvement in that direction will doubtless take place.—C. W. S.

Ixora javanica floribunda in Bloom.—This, though by no means a new variety of Ixora, still remains one of the best for autumn and winter blooming. Several excellent specimens of it in the Holloway Nurseries are still flowering abundantly, a condition in which they have been for at least five months.—A.

Echeveria secunda for Winter Blooming.—In a florist's establishment at Acton I noticed the other day 400 or 500 plants of this Echeveria in 48-sized pots, literally covered with strong spikes of orange-scarlet blossoms. Though not often grown for the sake of its flowers, this Echeveria is evidently capable of being made to form handsome little plants, full of bloom at Christmas.—P. S.

Lælia albida at Tooting.—This useful white-flowering Orchid may now be seen in excellent condition in Messrs. Rollisson's nursery at Tooting. Having long stalks, and lasting in bloom for a considerable length of time, its pure white and yellow flowers are extremely useful in a cut state for the decoration of vases and épergnes.—W.

Grevillea Priesii.—This is without doubt the most useful of all the Grevilleas, coming into flower as it does at this dull season of the year, when blossoms of all kinds are valuable. Its numerous trusses of scarlet flowers produced in great profusion even by small plants, and its highly ornamental foliage render it a most desirable subject for the decoration of the greenhouse or conservatory. A large number of dwarf, stocky plants of it, in Messrs. Rollisson's nursery, now blooming profusely, have a very striking effect.—C.

Exhibition of Artificial Flowers.—An exhibition of artificial flowers and fruit is to be held in March next at the Crystal Palace. The classes will comprise flowers (wild and cultivated), Ferns, and fruit, and will be so arranged as to provide for competition amongst amateurs as well as amongst manufacturers.

Oncidium cornigerum as a Winter-blooming Plant.—Several hundreds of healthy plants of this Oncid growing in the Clapton Nursery are now one mass of bloom. Many of the flower-spikes are from 2½ ft. to 3 ft. long, branching, and thickly beset with small but beautifully spotted golden blossoms. As a winter-flowering plant this Orchid has probably few equals.—S.

Pitcairnia muscosa at Tooting.—Several plants of this are now blooming freely in an intermediate-house in Parker's nursery at Tooting. Their flowers, though not of so long duration as those of some plants, are wonderfully showy when produced in quantity as they are here, each shoot being clothed 3 in. or 4 in. from the top with blossoms which are excelled in brilliancy by few plants at this time of year, Poinsettias excepted.

Poinsettias at Acton.—Mr. Reeves' Poinsettias now present a display unequalled as regards effect by any other plant at this time of year. Several houses 96 ft. in length are entirely devoted to this plant, for the culture of which Mr. Reeves has earned a well-deserved reputation. To see two or three span-roofed houses of the length above mentioned and 15 ft. wide, containing upwards of 2000 plants all in full flower at one time is indeed a dazzling sight. They are struck from cuttings (not eyes, as is often done), which are inserted in small pots in the spring and plunged in bottom-heat, and immediately they are rooted they are taken out and placed in the houses in which they are to flower, being shifted on into larger pots as they require it. Abundance of air and all the light possible are admitted during the growing season, and fine, dwarf, healthy plants, with flower-bracts 12 in. to 15 in. in diameter, are the result.

Tulips for Market.—Some idea of the extent to which these flowers are cultivated for the London and other markets may be gleaned from the fact, that one grower alone (Mr. Reeves, of Acton) imports and grows yearly as many as 160,000 roots. Some of the flowers are used for cut bloom, but the majority of the roots are potted into 48-sized and 32-sized pots, a size in which they are bloomed and brought to market.—J. S.

Christmas Roses in Conservatories.—These form most welcome plants in conservatories or greenhouses at this time of year, when their large, pure white, single Rose-like blossoms are produced in abundance, as they are now on some plants in one of the houses at Tottenham. They are grown out-of-doors until unfavourable weather sets in, when they are carefully lifted and potted in 14-sized pots and placed in a cool house; in such a position they flower so freely, that on some of the plants may be counted as many as twenty expanded blossoms and large quantities of buds. Such plants are easily procured, by no means difficult to cultivate, and are extremely useful about Christmas time.

Seedling Gloxinias for Autumn Blooming.—Every one is acquainted with the value and beauty of a good collection of these charming stove plants, but probably many may be unaware of the short space of time it takes to bring seedlings to a useful flowering state. Large quantities of bulbs raised from seed sown last March may now be seen in Mr. Wills' nursery at Anerley, each measuring on an average 2 in. in diameter. They are placed in shallow boxes filled with Cocoa-nut fibre, subjected to a gentle bottom-heat, and they are all breaking thickly and strongly. As soon as roots are found to have started from the bases of the bulbs, they will be potted and grown on for furnishing purposes, making compact, sturdy, small, flowering plants in August, September, and October.

Cyclamens at the Ealing Dean Nursery.—Perhaps the most interesting floral display now to be seen in the neighbourhood of London are the Cyclamen-houses at this nursery. Here are yearly grown for market purposes about 10,000 plants of this favourite flower. They are kept in low span-roofed pits until they come into bloom, when they are removed into light, airy, span-roofed houses, and placed on beds 6 ft. wide on each side of the pathway which runs along the centre. There are now three houses, each 50 ft. long, thus occupied, and a more beautiful sight could not well be imagined. Among others one with semi-double flowers was especially remarkable. The plants are in 5-in. pots, are now just fifteen months old (many of the bulbs measuring 2½ in. in diameter), and are very full of buds and flowers. The individual blossoms, too, are as fine as any we have ever seen, being of unusually large size and bright in colour. Thousands of seedlings for flowering next year have just been pricked off, the bulbs being about the size of Peas.

Narcissus (Bulbocodium) monophyllus.—During the past week the Rev. A. Rawson, of Bromley Common, has submitted for our inspection a good specimen of this plant, which, apart from its chaste beauty, was remarkable as an example of the successful culture of a most unmanageable Daffodil. The plant bore three fully expanded flowers and two buds, the foliage being from 9 in. to 12 in. in height, and of a dark, glossy green. The flowers are of the purest white colour, the cup-shaped, elegantly crisped corona being surrounded by six slender segments. An engraving of this delicate little plant, and a full description, will be found in The Garden for 1876, pp. 239 and 259. It is certainly one of the most lovely of all winter-flowering plants, and is additionally interesting as a memento of the late Mr. Giles Mumby, who re-introduced it from Algiers.—B.

Veronicas for the Window.—I saw in Lambeth a few days ago, in a locality dingy, smoky, and dirty, the Blue Gem Veronica on a window-sill. It was in good bloom, and promised to continue so for some time. It is probable that the Veronicas of this type are peculiarly fitted for window purposes, as they are very hardy, and flower at a time when other plants are at rest. I have now in bloom seedlings of the pretty pale variety, and few plants could furnish more useful sprays for dressing epergnes at this time of the year than this Veronica.—A. D.

Ficus barbata.—This, though seldom met with in greenhouses, is nevertheless a useful plant for clothing back walls of such houses rapidly, where few other plants would succeed. It is employed for this purpose in Messrs. Carter's nursery, where its large, handsome foliage, clinging firmly to the brick-work, is little inferior in beauty to that of the well-known Cissus discolor, and the plant does not need half the heat and attention which the Cissus requires.—S.

The Scarlet Wind-flower (Anemone fulgens).—Fifty years ago this was common in cottage gardens about Bath and Bristol, therefore it cannot be of recent introduction, as supposed by Mr. W. B. Hartland (see p. 558). I grew it in many patches at Bitton; and here too it flourishes with me, not showing flowers, but in cheering green patches. It is a most desirable hardy plant.—H. T. Ellacombe, *Clyst St. George.*

THE FLOWER GARDEN.

A CHRISTMAS-FLOWERING IRIS.

(IRIS (XIPHION) ALATA).

This charming plant is just now opening its flowers a second time in Mr. Barr's seed grounds at Tooting, where it is growing in an open-air bed without any protection whatever, except that the corms are surrounded by bottomless pans, so useful to bulb growers in keeping would-be stragglers at home, a necessary part of bulb culture, especially where nearly related species of bulbous Irises, Crocuses, or other bulbs are grown in close proximity. Iris alata is a native of the Mediterranean region, and was introduced as early as the beginning of the present century; indeed, it is mentioned by Miller under the name of Xiphion planifolium, and a coloured figure of it is given at t. 1876 of the "Botanical Register." Our illustration, sketched from Mr. Barr's specimen, shows the habit of the plant; but individual flowers are frequently much finer than that here represented. The bulbs are large, often 2 in. in diam.; but the sketch elsewhere introduced may be taken as being about the average size; and from them are produced five or six pointed, sheathing, soft green leaves, which, as seen above the soil, have quite a Leek-like habit; from the centre of these one, and sometimes two, lilac-blue gold-crested flowers are produced, the petals on either side of the slightly hairy crest being mottled with white. It would be interesting to know the natural flowering season of this plant in its native region, many parts of which will soon now be gay with crimson Wind-flowers, Paper-white Narcissus, and other beautiful flowers. From a garden point of view, this plant is most valuable, being one of the latest blooming of all the Irises, although other Irids, such as Crocus Cartwrightianus, C. sativus, and one or two other plants bear it company; and, if the weather continue mild, the delicate Xiphion Histrio will succeed the plant now under notice, together with the New Year's Crocuses of different kinds, Snowdrops, and a few of the earliest flowering Daffodils. B.

A Christmas-flowering Iris (I. (Xiphion) alata).

New Zealand Flax hardy.—Is it generally known that this is perfectly hardy? In this part (North Hants) it is our best winter outdoor plant. There are immense bushes of it in several gardens in the Isle of Wight, and now that the surrounding vegetation is naked, the giant Iris-like form of their foliage is seen to the greatest advantage.—W. W. H.

Clearing Lawns of Daisies.—Digging them up is the surest means of removing Daisies from lawns, but although some recommend this to be done in autumn, I do not think that is the best time to set about the operation, because when lifted they leave bare patches on the lawn which remain unsightly during the winter, whereas, if removed in spring the Grass soon grows over the holes and obliterates all eyesores.—South Devon.

Verbenas and Pelargoniums.—Mr. Peter Henderson states, as an indication that the Verbena, as a bedding plant, is giving place to the Pelargonium, that while in 1870 his sales of Pelargoniums were less than 20,000, they numbered in 1875 upwards of 100,000, while the number of Verbenas sold has continued to diminish during this period. As a fitting appendix to this, we may state that in the neighbourhood of London, the sales of hardy plants are now many times more numerous than they were a dozen years ago.

NEW ANNUALS.

You were kind enough on a previous occasion to insert my report upon the new annual flowers of the year, but last year there really was nothing new worthy of note, unless exception be made in favour of the white Silene compacta, which will doubtless, when settled (it now sports rather), make a capital companion to the rose-coloured one as a spring bedding plant. The past season was not favourable to annuals, being too hot and dry, but the following are worth notice, viz.:—

Candytuft—New Hybrid.—Apparently a cross between amara and jucunda, having the short growth of the latter, with a variety of colouring, from pure white, through lilac, peach, and salmon, to carmine; an extremely pretty novelty.

Clarkia elegans—Double White.—An erect growing sort with pure white double flowers, produced in the axils of the leaves, from the ground to the extreme growing point; very constant.

Convolvulus minor—Violet-crimson.—Somewhat darker in colour than unicaulis or splendidissimus, but not so good a flower.

Godetia Lindleyana fl.-pl.—Not new, but a very striking annual, and with a carefully selected stock, very constant in producing good double Althæa-like flowers of the same colour as its parent.

Godetia Whitneyi flammea.—This now favourite and showy annual is, with a heightened colour produced by a large plume of intense purple-carmine commencing at the base of each petal, and extending nearly half way to the edge of the petal, very showy and good.

Martynia—New Hybrids.—These, if grown in a stove, would be considered very effective, but flourishing as they do in the open ground, without even being raised in heat, they remain only very pretty annuals. The flower is of a different shades of purplish-carmine with golden throat, the lower lip being, as it were, powdered with a minute bead-like dust, which, under the microscope, has a beautiful appearance. The seed-pods are handsome, and are used on the Continent as a pickle.

Mignonette — Dwarf Bouquet Pyramidal.—A variety of great excellence, having long, compact spikes of flowers, supported on stout, erect, footstalks; very fragrant, and a fine sort for pot-culture.

Tagetes patula nana fl.-pl.—A dwarf, bright golden Marigold, used with great success in the gardens at Eastwell Park. Height, 9 in.; growth compact.

Virginian Stock—New Carmine.—A very dwarf kind with bright rosy-carmine (almost scarlet) flowers, and dark small foliage; doubtless excellent for spring bedding.

Rose Nursery, Ashford. T. Bunyard.

Veronica Andersoni.—A bushy plant of this Speedwell, growing in front of one of the plant houses at Kew, is now one mass of bloom, a condition in which it will keep for a long time to come should severe weather not set in. Few flowers are more useful than those of this Veronica for furnishing vases, &c., when cut with a fair proportion of leaves attached to them, and plants that will produce such abundance of bloom at this season of the year without any protection, cannot be too highly prized, nor too extensively planted.—S.

CYFARTHFA CASTLE.

This, the seat of Mr. Robert Crawshay, is about a mile and a half distant from what used to be the capital of South Wales —Merthyr Tydvil. It is a town of considerable size, with no pretensions whatever to elegance, as indeed could hardly be expected in a place lying under the smoke of iron forges and blast furnaces. It has experienced the ill effects of the collapse in the iron trade perhaps as much as any place in Wales. Cyfarthfa Castle was erected in 1824 by the present proprietor's father. It is a large edifice in the Gothic style of architecture, built on the brow of a mountain some 800 ft. or 900 ft. above sea-level, and overlooks the Cyfarthfa Ironworks in the valley and the surrounding country for miles. A large park in front of the Castle stretches down to the public road leading to Merthyr, and is enclosed by a high wall with castellated coping. At the lower end of the park near the public road is a large lake of clear water, stretching from one entrance lodge to the other (for there are two), and covering a space of some 10 acres. It is well furnished with trout of large size and other fish, which appear to thrive well in it, as there is always a fresh stream of water running through it to the ironworks below. The gardens are situated at the back of the Castle, and are very extensive, as will be seen from the following report. Mr. Crawshay takes great delight in gardening, of which he has a thoroughly practical knowledge.

Let us now allude to the glass structures. The first house entered was a large span-roofed stove filled with specimen plants of various sorts. Amongst them were several fine Crotons, some of them from 5 ft. to 6 ft. high, and as much in diameter. Large plants of Bougainvillea glabra, trained on wire trellis, were covered with bloom; they are allowed to grow away freely from the trellis till they show flower, after which the shoots are neatly tied down into their proper places, and in a few days the leaves that are underneath turn to the light in the same way as if the shoots had always been exposed to it. Adjoining this stove is an intermediate-house of the same size, filled with large plants of Allamandas, Camellias, Azaleas, Dipladenias, Oranges, and Tree Ferns. Part of this house is covered with a large Maréchal Niel Rose, which does remarkably well, and is found to be very useful for furnishing blooms early in the season when flowers are scarce. This plant produced no fewer than 370 buds last spring for decorative purposes. Some Camellias here were in unusually good health, the foliage large and clean, and the plants covered with flower-buds. During the growing season Mr. Battram's practice is to supply them with water, in which a mixture of soot and cow-manure has been dissolved, and to this treatment he attributes the healthy state of the plants. Among Allamandas was a good specimen of A. Hendersoni in full bloom; this is one of the best of its class, and one which is highly prized wherever it is grown. Conspicuous in this house was a large plant of Kalosanthes coccinea, measuring about 5 ft. in height and the same in diameter; it was well furnished with branches from top to bottom, and I counted ninety large trusses of bloom on it fully expanded, besides many more not so far advanced; it is rarely now that one sees such a fine plant of this old favourite. In the centre of the house were two large Tree Ferns (Dicksonia antarctica), well furnished with long, healthy fronds, and a beautiful plant of the by no means common Palm (Pritchardia pacifica), some 14 ft. high. To the Heath-house, pits, and other plant structures which are numerous, further allusion need not be made, beyond mentioning that they are well furnished with healthy stock.

In the kitchen garden, notwithstanding the hot dry summer, there was no scarcity of Peas, Cauliflowers, or other vegetables at the time of my visit (August 14), while in many places close by the Pea haulm was completely dried up, and Cauliflowers were anything but good. Mr. Battram trenches deeply, manures abundantly, and hoes frequently amongst his crops in dry weather. In seasons such as the last land deeply trenched and repeatedly hoed will withstand more drought than ground that has been less skilfully treated. By continual hoeings evaporation is retarded, and in wet seasons heavy rainfalls will percolate and run off much faster than on ground that has not been trenched. The gardens here are famous in South Wales for the number of forcing-houses they contain, and for the enormous quantities of Pine-apples, Grapes, Peaches, Nectarines, Figs, and Melons that are produced in them in the course of a year. There is no private or other establishment in South Wales that has anything like the number of glass structures that may be seen here. Many of them are old, and little can be said in commendation of their architectural beauty or of their plan and general arrangement—for one thing, they are too much scattered; still, on the whole, Cyfarthfa is a most interesting place to horticulturists, and will amply repay a visit, if for nothing else than to see the large number of Vines that are grown there with the best results. In describing these fruit houses let us begin with the late cold Vinery. This is a lean-to house, about 45 ft. long, and of good width and height; it is planted chiefly with Lady Downes Seedling and Gros Colman Grapes, and the Vines were healthy and clean and were carrying a good crop of fine fruit. Next in order is the late Muscat-house, which is of the same dimensions as that just named; it is planted with eleven Vines, and each of these was carrying from eighteen to twenty bunches, of which each would weigh from 2 lb. to 5 lb.; they were compact and well furnished with fine berries. After this were some Pine stoves and pits, beginning with the Providence stove, which was well stocked with large plants of that variety; then follow two pits for growing Queen Pines; in the first were 125 well-grown plants, dwarf and stocky, for fruiting next year; in the next there were about 100 with half-swelled fruit, looking all that could be desired. In the Melon-house the first crop had been gathered, and an excellent second crop was set and swelling freely, proving that a second crop may be obtained from the same plants by careful management. The Peach wall, here so called, is a lean-to structure, 144 ft. in length, 10 ft. in width, and some 12 ft. or 13 ft. in height, well ventilated both from the front and back. It is, strictly speaking, a cold orchard-house, in which Peaches, Nectarines, Plums, and Apricots are planted out, some on the back wall, and some in the front of the house. Those in the front are allowed to cover a portion of the roof, but not to such an extent as to injure the trees on the back wall by shading them. Apricots do not succeed here, but Peaches and Nectarines are successfully grown. Nectarines were good and plentiful, especially the Elruge, which was in all respects excellent. Some well-managed plants of Salvia splendens were also growing in this house. They flower during the winter months, and are found useful for taking into the Castle, when flowers are required at that season. The early and second early Peach-houses are span-roofed, each 52 ft. in length, 12 ft. in width, and 12 ft. in height, and they are planted with trees on both sides. To prevent spider from attacking the trees, they are never allowed to become dry at the roots. During the hot weather of last summer the quantity of water that was showered on the borders was something incredible. During the time in which the trees are in flower, and the fruit setting, Mr. Battram practises the orthodox system of keeping the flowers dry, and he never fails in having enough set and to spare. In addition to these is a Peach-house 144 ft. in length. In this house some of the trees were planted in the front and some on the back wall. Tomatoes were also planted in the front border, and were bearing a heavy crop of fine fruit.

Next to the Peach-houses are several ranges of Vineries, the first of which is principally devoted to the growth of that splendid Grape the Golden Champion, which Mr. Battram has tried in various ways, but he cannot get it wholly free from spot. From the time the berries are stoned till the fruit is ripe the Vines receive the greatest attention in the way of giving and taking off air as required, and a little air is left on always at night. The wood was strong and short-jointed, and under this treatment neither wood nor leaves showed any signs of a weak constitution. Cases have been reported in which this Vine would not grow, but such cannot be said of it here. Foster's Seedling, growing at one end of this house, was carrying a heavy crop of well-finished fruit; this variety is a great favourite here, notwithstanding the hard things that have been said about it lately as to its being flavourless and worthless for the table. What is termed the experimental Vinery is 75 ft. long, 15 ft. wide, and span-roofed. It is here that the newer kinds of Vines are proved previous to their being planted permanently elsewhere. Next to this is a late Vinery of the same size planted with such sorts as Black Ali-

cante, Madresfield Court, and Lady Downes Seedling; then follows the Canon Hall Muscat-house, which is 50 ft. in length and 18 ft. in width, and has a good pitch in the roof. This is one of the best houses of this variety of Grape that I have seen. The Vines are planted in a prepared border outside, and the whole ground surface of the house inside is paved with fire-clay bricks. The wood and foliage of the Vines testify at a glance that their wants are well supplied, and prove clearly that an outside border suits them as well, if not better, than if they were planted in an inside one, the roots having the option of going either in or out. Some of the best Vines I have ever seen were planted outside, and I feel certain that if Vines thus planted be liberally treated during the growing season, they will live longer and fruit better than Vines planted in an inside border. Vines planted in inside borders often suffer from want of a proper supply of water, and I find from experience that Vines thrive best when the borders are never allowed to get dry at any season, growing or resting, and Vines so treated are seldom attacked with red spider. The bunches and berries in this house were large, and the colour all that could be desired —a beautiful amber. At one end of the house was a Vine of Madresfield Court (a kind that does remarkably well here), carrying twelve bunches of finely-finished Grapes, each bunch averaging as much as 5 lb.; this Grape sets freely here, swells off evenly, carries a good bloom, and when ripe has a fine flavour. The late Vinery is 102 ft. long, and 20 ft. wide; it is planted principally with Lady Downes Seedling, Muscat Hamburgh, Black Alicante, and Barbarossa, in a prepared outside border; the Barbarossa sets well in this house, but it would be the better for a little heat during the time when it is in flower. Muscat Hamburgh is an excellent Grape, but it unfortunately shanks in most places; here, however, it seems to do better than usual. The Vines were robust, clean, and healthy, and were bearing a good crop of fruit, which was swelling freely. The early Muscat-house is 50 ft. by 18 ft., and has an inside border in which the Vines are planted —one to each rafter—and they are treated on the single rod and spur system. The Grapes in this house were ripe, the bunches being large and well formed, and beautiful in colour. Next to this is a span-roofed Vinery, 50 ft. by 12 ft., planted with Black Hamburgh, on which there was a good crop of finely-coloured fruit. Then comes what is called the Fig-house; but besides being used for Figs, it is here where Mr. Battram grows and fruits his pot Vines. It is a span-roofed house 60 ft. long and 20 ft. wide, with a path round the sides. The Figs are grown in the centre bed, and the Vines are placed on the side stages or shelves, and trained up the rafters. One side of this house is devoted to Vines fruiting in pots, and the other to growing Vines in pots to fruit the following year. I counted twenty-one Vines, each of which carried eight bunches, which for size and finish could scarcely be surpassed. The bunches were compact, had a fine bloom, and would weigh from 2 lb. to 3½ lb. each. The variety mostly grown in pots here is the Black Alicante. Close to this house are three succession Pine-pits, each 100 ft. long and 10 ft. wide, and abutting on these a fruiting stove, which is used for Queen Pines. It was newly filled with eighty large plants for fruiting next year, and the pits contained a stock of healthy succession plants.

Leaving this I come to what is called the iron Vinery, which measures 30 ft. by 14 ft., and which contains Black Hamburghs planted outside; the inside of this house is paved with bricks. The Vines were looking well, and carried a good crop of ordinary-sized bunches, which had coloured well. Associated with this was a large orchard-house planted with small pyramidal Peach and Nectarine trees, and close to it a Pine stove containing 135 plants of Black Jamaica, and a pit in which there were 120 of the same variety. The plants in both cases were strong and healthy, and most of them were started and showing fruit of good size, which would ripen about Christmas. A. P.

Bulb of Iris (Xiphion) alata (see p. 579).

THE GARDEN IN THE HOUSE.

FLOWERS AND PLANTS FOR ROOM DECORATION.

About Christmas time there is usually in every place, however small, a great demand for flowering plants wherewith to furnish vases, embellish side-boards, chimney-pieces, and similar positions, and very often, where glass houses are limited, the demand is greater than the resources available are capable of supplying. Many cultivators in small places reasonably object to the few choice plants which they may happen to have in flower being taken into sitting rooms, &c., to be speedily spoilt by the heated fumes of gas; and at this time, more than at any other festive season, it frequently happens that plants are required to remain for several days in such positions; it is therefore well, as far as possible, to do all in our power to prepare for such emergencies, and spare our choicest plants by subjecting to such treatment those of less value although at the same time as near as possible of equal beauty. Tulips, Hyacinths, Cinerarias, Primulas, Lily of the Valley, small Ferns, and Lycopods are, as most people know, excellent plants for this purpose, and they may all be grown with comparatively little trouble or expense; they take up but little room when growing, and they last for a long time in bloom. When properly arranged, such plants as these may be made to look very bright and effective, especially when introduced into rooms where evergreens are employed for Christmas decorations.

Where numbers of stands of flowers are required the best for the purpose are wooden saucers about 2 in. deep, round the outsides of which are nailed or glued neat pieces of Virgin Cork. Light, shallow wire or wicker baskets may be also used for the same purpose, but in the absence of these any ordinary workman may soon make a quantity of wooden ones of the kind just described; even shallow seed-pans are often employed in this way, but these are heavy, and their outsides are not so easily hidden, whereas Virgin Cork rather adds to than detracts from the effect of the arrangement. Ferns and Lycopods should be grown in small pots for this purpose, in order that they may be turned out and used as edgings without taking up much room. The Tulips and Hyacinths should be grown in the same way in which they are raised for market, viz., in shallow boxes 3 in. apart; they should be kept in the dark until the bulbs have made sufficient roots, when they may be gradually exposed to light and air. When the flowers begin to open, the bulbs should be lifted with as much earth adhering to the roots as possible, be tied up in damp Moss, and placed in their positions in the pans. The best kinds of Tulips for the purpose are the single Duc Van Thol, the white and yellow Pottebakkers, and the brilliant scarlet La Belle Alliance; these are all cheap, easily forced, and of good bright colours.

Lily of the Valley may easily be got into flower by purchasing imported flowering crowns. They are now sent to England in a very different way from what they formerly were. Instead of large clumps being exported in soil in which the crowns were imbedded, only crowns which are sure to flower are now sent,

and these without earth. By this means good crowns can be imported at a wonderfully cheap rate, and may be bought at about 8s. per 100. Other crowns from the home garden must of course be taken up and forced along with them in order to supply foliage. The best way to force them is to place the roots in Cocoa-nut fibre, in which there is a gentle heat, but in this respect little care is needed, as they will bear any amount of bottom-heat with impunity. These may also be taken up and tied in Moss in the same way as the Tulips, &c. Indeed, whatever plants are used for this purpose, they should be turned out of their pots, the soil slightly reduced, and the roots tied up in Moss, taking care, however, that the soil is thoroughly moistened before the plants are turned out. A quantity of good green Moss should be kept on a damp floor and frequently watered, in order to have it in readiness when wanted for tying round the roots as well as for filling in between the plants. After this fashion baskets of plants are prepared and sold in Covent Garden, and they last in good condition for a considerable length of time. Owing to the plants used being but of trifling value, they can be sold at a cheap rate, and they are much more pleasing and effective than many of the stiff and formal designs frequently employed for such purposes. S.

Roses in Window Gardening.—There is no plant with which those who follow window gardening so much desire success as the Rose, and none that brings such a regular crop of disappointment. The lack of success in window cultivation may be due to one of several causes—an unsuitable variety, improper previous treatment, bad soil, too much heat, mildew, insects, and over-watering—either one of which will be sufficient to account for failure, and it often happens that there are several of these causes combined. Whoever succeeds in growing Roses satisfactorily in a house of the modern style, where the tight windows are made tighter by weather-strips, and the fires render the air unfit for plants and human life, achieves a horticultural triumph. On the other hand, in country houses, and where on a cold night the plants must be moved away from the window and covered with a blanket, we have seen Roses flourish as well as one could wish. The Roses known as China, Bengal, or Monthly, and some of the hardier Tea Roses, are, according to the "American Agriculturist," best suited for window culture. The old Daily Rose belongs to the China class; both the blush and white varieties are among the most certain of any. In purchasing Roses for window culture, the advice of an intelligent florist will be safer than one's own selection from descriptions in books and catalogues. Be sure that the Roses have been grown in pots, and not taken up from the open ground and potted, as they rarely recover in time to be of much use. As to soil, it matters little what it is, provided it be porous, as liquid manure may be used if it be poor, but if it become stagnant and close, the plants will fail. Roses when growing need at most a temperature of 70° in the daytime, and it may go 15° to 20° lower at night. Do not overwater; always let the soil get a little dry on the surface before watering. Syringe as often as convenient; once a week at least, but twice or three times is better; set the pots in a bath-tub or sink, and use a fine sprinkler. If aphides appear, syringe with weak Tobacco-water, or if the plant be small dip it in the Tobacco-water. Sudden changes of temperature and cold draughts are apt to cause mildew, and should be avoided in airing. When a shoot has bloomed, cut it back to a good bud; do not be afraid to use the knife.

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Fine Lemon-scented Verbena (Aloysia citriodora).—In most cottagers' windows may be found plants of this, but they are seldom in good condition. I however saw one the other day in a cottage window at Finchley between 7 ft. and 8 ft. high, and from 5 ft. to 6 ft. in diameter. It was in a 12-in. pot, and I was informed that it was twenty-three years of age. It is re-potted in fresh soil (reducing the ball) once during every two or three years. In winter it is kept in a back-house, and in summer it occupies a shady position out-of-doors, where it makes wonderfully fine growth and invariably flowers profusely. The only pruning which it receives is in the shape of removing dead wood, if any, and a more magnificent specimen could scarcely be imagined.—S.

Hyacinths in Moss Baskets.—Hyacinths in water, and in soil in pots, are common ornaments for winter. Mr. Peter Henderson describes in "The Agriculturist" the mode for placing them in Moss baskets. Press the Moss moderately firm into the wire basket, the bulbs being one-third above the surface. The whole should then be saturated with water, and placed in some dark, cool place, as a cellar or closet, where the temperature is not above 50°; in five or six weeks the roots will fill the Moss. The basket should then be brought into a room and hung against a window, with a temperature of 60° or 70°, and the plants will bloom in three or four weeks. Watering them with very weak guano water once a week greatly increases their size and brilliancy; an ounce of guano to a gallon of water is sufficient.

CHURCH GARDENS.

There is no place where our backwardness in all that is best and most essential in gardening is more apparent than in the churchyard. All the advantages that could be desired for a charming garden are sometimes combined in these places, yet the rule is to see them as bare as a housetop, and much less interesting as regards vegetation than the very ditches by which they are surrounded. This is true, not of churchyards in towns, but in the fairest parts of our fairest counties. Indeed, in cities and towns trees and shrubs often embellish the space around the church, whereas in some beautiful parts of Kent, or Surrey, or Warwickshire, it is common to see a church without a particle of graceful vegetation on either the walls of the church, the ground, or the low walls that sometimes surround the whole, yet no spots are more easily converted into lovely gardens; and in these days of costly church decorations from Southampton Street one may surely not in vain call attention to the wants of the church garden. Thousands spent on the most elaborate artistic decorations indoors will never produce such a beautiful and all-satisfying result as a few score pounds judiciously spent in converting the churchyard into a church garden. There are several reasons why churchyards are more than usually favourable spots for the formation of gardens of the best kind. The site and situation in the country at least are frequently favourable and picturesque, the soil is generally suitable, the tree-planter has usually the assurance that what he does will remain for ages, the associations of the spot are such as to make the mind awake to the influences of great natural beauty, the walls of the church usually offer the finest opportunities for the display of the noblest hardy climbers, the walls of the churchyard advantages for the development of those of more humble growth, the ground is generally admirably adapted for noble trees, and the very turf may easily be converted into a garden of delight. And now as to the best way to work.

Trees.—These we should begin with. One, the Yew, is even more enduring than architecture itself; and it should never be forgotten that gardeners have observed and propagated varieties of this tree which differ greatly from the ordinary type, and are no less beautiful—the Irish Yew, for example, one of the most precious trees in existence, because it is as hardy as it is distinct from all other trees in beauty. It would be easy to adorn many a churchyard with varieties of the Common Yew alone, and of these we should certainly give preference to the green as against the variegated kinds; but though we shall never get any finer trees than our native Yew and its varieties, it must be remembered that our gardens now contain many noble evergreen trees from various countries, and from which a selection may be made; but in that selection there never should be a tender tree. It has long been quite fashionable to plant quantities of evergreen trees not hardy enough for many districts of the country, and even where they seem so far to be hardy, anybody who knows anything of the quick growth of the trees in their own and in more favourable climes, knows also that they will never attain their natural dignity or beauty in this country. There are, for example, many places where the Deodar, the Wellingtonia; or the Araucaria should not be planted, not to speak of others. The church garden being usually limited in space, for this reason alone only trees certain to be long-lived in the situation should be planted. Evergreens have been mentioned first. Summer-leafing trees should, however, not be neglected, as among these are our most beautiful flowering trees, and many of them give also refreshing shade and pleasant foliage fresh and green long into the autumn, as, for instance, the Locust Tree. Where the space is limited and it is desirable, as it nearly always is, to leave some room between the trees for views, &c., the various pyramidal or tapering trees will be useful. In planting it is essential not to hide the building itself from important points of view. To enhance and not to conceal beauty should be the planter's object, and he can scarcely pay too much attention to points of view both from and to his site. In all the results of planting there is nothing more lovely than the contrasts afforded by the leaf-builders and the stone builders when their works are seen in association. Our illustration of the grounds round Salisbury Cathedral shows this,

SALISBURY CATHEDRAL GARDEN.

as does the annexed illustration of the Abbey of St. Victor, and this also is a point well worthy the especial study of those interested in churchyard planting.

The Walls.—All who know how readily and simply the walls of churches may be made into charming gardens of evergreen or flowering plants must regret that so many of them are bare of even Ivy or Virginian Creeper. On Caunton Church there is a large and free-blooming specimen of Gloire de Dijon Rose, and many of the finest flowering climbers could be grown in such positions. Fresh foliage or roseate blooms are never seen to greater advantage than against the worn grey or brown stones of our churches. The several sides of the church may each have its appropriate plants, choice Roses and the least hardy subjects having the warmer and more sheltered walls. Where Ivy is used it should not be allowed either completely to cover the walls, or to wholly exclude other and less common subjects. The low walls often placed round graveyards offer also a desirable position for wall plants, such as the various Ivies, Clematis, Cotoneaster, &c. Sometimes tombs may offer opportunities here and there for the growth of a plant of similar character; and here we would say that we would countenance no disturbance of any monuments or graves for planting of any kind. Intelligence will be best employed in beautifying, not concealing or obliterating such objects.

Flowers.—Flower-beds of the common type are quite out of place in a churchyard. A group of Yuccas or of Lilies may be planted, but they do not need formal beds; but the tasteful gardener may make at least one beautiful large bed—the whole of the turf. In this one of the ideas of the "wild garden"—dotting bulbous flowers through the grass — may be most effectively carried out. It is scarcely necessary to state here that many of our brightest spring flowers are easily naturalised in Grass. The surface of the churchyard is often suitable for this, because the Grass in it is not mown so early or so primly as that in gardens. There are usually in churchyards little variations in surface or soil which favour the development of a variety of spring-flower life, and the flowers are very welcome among the budding Grass in spring. The Scillas and Snowdrops do exceedingly well in turf, and so does the Apennine Anemone. It may be urged that the occasional needful disturbance of the ground would interfere with these plants, but once well established, they would not mind this in the least. Groups of Daffodils of various kinds would look exceedingly well in the turf; they perhaps would require watching, but they would repay it by their noble blossoms, which seem quite regardless of harsh weather in spring. V.

The Abbey of St. Victor.

PLANT GROWING FOR MARKET.

Visitors to our great London flower markets, and those who are in the habit of seeing the numberless hawkers' barrows laden with plants that daily parade the streets, must doubtless have many times wondered whence such countless myriads of beautifully grown plants come with such regularity at all seasons of the year. If, however, people who are astonished at this, could have a peep at some of our immense, though almost secluded, suburban plant factories, they would wonder no longer, except it might be as to where such innumerable hosts of plants of all sizes and varieties contained in such places are disposed of. Every one is of course acquainted with the numerous small florist establishments, with their dozen or more small houses, in which are grown bedding plants wherewith to deck the gardens of the suburban villas, as these usually occupy prominent positions in important thoroughfares, where they can be readily seen by passers-by, but comparatively few are acquainted with our large plant depôts in which goods are manufactured wholly for market, many of them being situated, as has just been stated, in such positions that people might readily pass them many times without knowing that such places existed. There are no elaborately painted sign-boards, nor direction posts, to make known to the stranger the name of the proprietor, and the character of his wares, for, as a rule, visitors to such places are certainly more a hindrance than a help to business. Through the kindness of Mr. Beckworth, of Tottenham, I was the other day, however, allowed to inspect one of these important plant-growing factories. It consists of several acres of ground, which are for the most part covered with glass, there being forty-two houses, besides immense ranges of pits, frames, &c. None of the houses are by any means small; on the contrary, many of them are of large dimensions, measuring from 100 ft. to 250 ft. in length and proportionately wide. Their construction is very simple indeed: they are chiefly span-roofed without rafters, the sashes in which the glass is laid being of iron, and placed at such distances apart as to admit a pane of glass from 18 in. to 2 ft. in width. Indeed, every ray of light that it is possible to admit to the occupants is taken advantage of, and to this may be attributed to some extent the marvellous results in the way of culture obtained there. The heating apparatus alone consists of seven powerful horizontal tubular boilers, each of which measures from 10 ft. to 12 ft. long and 6 ft. to 8 ft. wide, and weighs 9 tons. They were prepared from plans furnished by Mr. Beckworth. To these are attached something like seven miles of 4-in piping, and in ordinarily mild seasons they consume 600 chaldrons of coke and 250 tons of coal, besides an enormous quantity of breese or small coal. No provision is made here to have gravel walks or paved floors; these consist simply of the hard ground, with now and then a barrow-load of broken clinkers thrown down to fill up holes in which water might stand. Notwithstanding this a system of order and regularity prevails throughout the whole place. Each class of plants is kept together in the department devoted to them. Each hand employed on the place has his regular work allotted to him, so that he always knows what to do and when to do it. Between thirty and forty men are employed in this establishment, and their employer has an excellent rule to which he strictly adheres, viz., that of securing good workmen, paying them liberally, and keeping them as long in his service as he possibly can. Frequent changes in such establishments are very inconvenient, as new hands take a long time to become acquainted with the work. Nearly all plant growers for market have something of which they make a speciality, and Mr. Beckworth's is Pelargoniums, which are admirably grown. Of show and fancy kinds from 80,000 to 90,000 are sent to market yearly, and of what are called Zonals, in proportion. The plants of the show and fancy kinds are struck in the spring, as early as cuttings can be obtained, and potted on till they occupy 48-sized or 32-sized pots. They are subjected to gentle warmth, abundance of air night and day when the weather will permit, and are copiously watered daily. The only kind of stimulant used in this great plant factory—for such it may be called—is soot-water, which is applied at different strengths, according to the different stages in which the plants may be.

This has the effect of dispelling worms from the soil, and imparting to the foliage a dark green, healthy-looking colour. The first batch of plants is now showing bloom, and they are indeed marvels of good culture. Few of them exceed 6 in. in height, but they are wonderfully shrubby and are thickly clothed with foliage down to the pot, and every point is set with fine, plump bloom-buds. The scarlet-flowering section is grown chiefly for the trade, as are also Heliotropes. Propagation is actively carried on from October to March. The plants sold to the trade are struck in shallow wooden boxes, in which the cuttings are placed as thickly as possible, and in this state, after having been hardened off, they are sent away to customers. Bulbs also occupy a very important position in this establishment, especially Hyacinths and Tulips. Of the former between 60,000 and 70,000 are forced yearly. They are potted in the autumn in 32-sized pots, and placed in square beds out-of-doors, and thickly covered with Cocoa-nut fibre; this, being light, can easily be removed to pick out the most forward bulbs from time to time, as they are required for forcing. Mr. Beckworth always contrives to send twenty dozen pots of Hyacinths to market the day before Christmas, and those intended for this purpose are now in a warm house kept partially dark, and they are all throwing up fine plump flower-heads. As these advance in growth, more air and light will be admitted to bring the foliage and flowers to the best possible perfection. Tulips are placed in shallow boxes in which they remain until flower-buds can be seen, when they are lifted and potted four or five in 48-sized or 32-sized pots, using good sandy loam for the purpose. The single Duc Van Thol is the principal variety grown. Lily of the Valley, too, is extensively cultivated here, as are likewise Narcissi, of which many hundreds are now in bloom. Lily of the Valley is plunged in a warm house in Cocoa-nut fibre, and covered to a thickness of 6 in. or 8 in. When the flower-spikes are found to be pushing, the covering is gradually removed. The roots to supply flowers are all imported, but those to furnish foliage are such as can be obtained out-of-doors anywhere. Lily of the Valley is chiefly grown for cutting for button-holes, &c. A whole house here is devoted to the culture of double white Primulas, for furnishing cut blooms, and the plants, being treated to plenty of heat and water, yield a supply nearly all the year round. Cyclamens are also grown here, but not in such quantities as other things, fine flowering plants of them of marketable size being produced from seed sown ten months previously. A very large house is devoted to the culture of Poinsettias, and a more brilliant sight than they present can scarcely be imagined, thousands of large scarlet bracts being open at one time. These plants are grown in 48-sized pots, are about 12 in. or 15 in. high, and well clothed with large green foliage from top to bottom. In addition to these several thousand Solanums are grown, 10,000 Begonia Weltoniensis, 12,000 Cinerarias, and as many Fuchsias. S.

TREES AND SHRUBS.

PENDULOUS CONIFERS.

Nearly all Conifers have a semi-pendulous or drooping aspect when young, as is well exemplified in the case of the Deodar Cedar and others, but afterwards as they attain age and size they lose it, and assume their usual or natural forms. The number of really pendulous Conifers is therefore by no means so numerous as might be expected. One of the most striking of the pendulous varieties among the Larches is the Godsall Larch, which, when grafted standard high on the common Larch, forms a striking and pretty object on a lawn. Lawson's Pendulous Larch is another form of the Common Larch, which in general appearance resembles the Pendulous American Larch; this kind when large forms a drooping tree with horizontal or extended branches, the lower ones of which frequently reach the ground. It is a native of the Tyrolese Alps. The Pendulous American Black Larch (Larix pendula) is the Hackmatack of the American woodcutters, and is found in the coldest districts from Canada to Virginia. The wood of the Hackmatack is superior to that of the Common Larch for lightness, strength, and durability. Smith's Inverted-branched common Spruce is a very singular variety, in which the leading shoot straightens itself in the old wood, after the manner of the Deodar Cedar; the lateral branches on old trees are as drooping as those of the Weeping Willow; it is superior as regards its drooping habit to all the other pendulous forms of the common Spruce. Abies canadensis gracilis is a very distinct variety of the Hemlock Spruce, with long, slender, little-divided, and drooping branchlets, furnished with very small leaves; it is a very distinct and desirable variety. The Drooping Chinese Arbor-vitæ (Biota pendula) forms a very distinct, dense, round-headed bush, with long, slender, green, little-divided, drooping branchlets; it is a native of Japan, and is very distinct from all others. The Funeral Cypress is now well known in most collections; when young it is erect and pyramidal, but when old, slender and quite pendulous. It is rather tender, except in favourable situations.

A Weeping Larch.

The Corney Cypress forms a small tree with numerous slender drooping branchlets, which, seen in a young state, are always pendulous. It is a native of China, and when old, quite pendulous and hardy. Of the Red Cedar (Juniperus virginiana pendula) there are two weeping forms, one the male, the other the female; it forms a slender-branchleted plant, with long, slender, undivided shoots; it is a very distinct variety. Retinospora, the Thread-branched Japan Cypress, is a very singular and elegant plant, with long, slender, little divided branchlets; it is a native of China and Japan. The Pendulous American Arbor-Vitæ (Thuja occidentalis pendula) has all the principal branches inverted, and the branchlets pendulous; it is a very handsome variety. Lawson's Pendulous Cypress is a graceful variety, the branches and branchlets of which are of a fine silvery hue; it is too well known to need description. The Yew-leaved Juniper is one of the most pendulous of all the Junipers, and forms a singular drooping bush, 8 ft. or 10 ft. high. It is a native of Japan and Loo-Choo in the north of China. The Recurved-branched Nepaul Juniper is a very singular kind, all the points of the shoots of which are reflected. It is called in Northern India Eagle Bush. It forms a small tree 8 ft. or 10 ft. high. The Weeping Wellingtonia, of which an illustration is given in Messrs. Little and Ballantyne's catalogue, has branches decidedly drooping, and if this character be maintained, it will be a valuable addition to weeping Conifers.

George Gordon.

The Sorrel Tree.—Perhaps the only way to popularize really good but neglected plants is to keep talking about them. We (American Agriculturist) have, on more than one occasion, had words of praise for the Sorrel Tree (Oxydendron arboreum), and mentioned its value for its late blooming, producing in July long clustered racemes of Lily of the Valley-like flowers, and that the fruit, which hangs on until winter, is also pleasing. It is a native of Pennsylvania and southward, and is quite hardy in Massachusetts. One of its great merits is that though it will grow from 30 ft. to 60 ft. high, it will bloom when only 4 ft. to 6 ft. high, and serves either as a shrub or a tree. Our reason for mentioning it now is to call attention to the beauty of its foliage in autumn. Were not our forests so generally beautiful, we should pay more attention to this feature in planting trees and shrubs than at present. There is good reason why we should consider autumnal effects in planting, especially as our trees that are fine in this respect are generally desirable in their green foliage. This year our autumn colours have been much less brilliant than usual, a matter to be regretted, as so many appreciative Europeans are now visiting us, and by far the most brilliant display of colour that we have seen has been made by our clump of Sorrel Trees. The foliage began to turn a dull red, and finally blazed out in the most intense of crimsons, almost dazzling when the sun shone upon it. The tree has another good quality: the leaves remain on a long while after they change, and we have this year enjoyed their brilliancy for between two and three weeks. The Sorrel Tree is one that we can heartily recommend to the attention of all lovers of really choice trees and shrubs.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Young Spruces for Winter Flower Vases.—I find that small Spruces answer exceedingly well for flower vase decoration in winter. I have just seen a few planted in vases on a parapet in front of a house much exposed to wind, and with good effect. Each plant was about 20 in. high.—Wm. Laurie.

The Partridge Berry (Gaultheria procumbens).—Few plants are more interesting than this at this season of the year when used as edgings for small beds or borders. Its deep green and bronze foliage and bright scarlet berries, which are seldom injured by frost, render it both useful and attractive.—S. [It is also a charming rock plant when it is allowed to spread into healthy tufts on ledges and similar situations.]

An Unfortunate Arboretum.—Property that cost the owners £7000 is being offered to the Corporation of Walsall for £3000. The property in question is the Arboretum of that town, upon which a liability company expended £4000, got into debt £3000 more, and have no means of paying that debt off or keeping the Arboretum going. These arboretums and aquariums having, as a rule, too much of the public house and concert hall in their composition, their failure is no loss to the cause of healthy public gardening.

The Chinese Juniper.—This is often planted amongst other Evergreens in masses, but not somuch in isolated positions as it should be. It is good in habit, and bears clipping without injury. Yews are often planted and clipped into various forms about lawns, but they are too dark in colour, and in this respect the Juniper is much superior to them, having a light silvery shade. A long row of Junipers planted on each side of a drive at Ossington Hall, near Newark, is much more effective than columnar Yews or any other evergreen usually planted in such situations.—H.

PLATE LII.

ROSES LA FRANCE AND MADAME LACHARME.

Drawn by H. NOEL HUMPHREYS.

At the happy reunion of Rose-growers, held at the Horticultural Club in London, on the 7th inst., on the suggestion of the Rev. H. H. Dombrain, for the establishment of a National Society of Rosarians, and for the revival of the National Rose Show, and when we were summoned from labour to refreshment, that is, from deliberation to dinner, and were enjoying in brotherly converse the pleasures both of memory and hope, I ventured to ask a question, often asked before, "Which would be your Rose, if you might have only one?" The answer was prompt, unanimous, and in accordance with my own judgment—"Gloire de Dijon." A tree of this variety, in prosperous maturity, upon a high wall with a southern aspect, would yield a larger amount of beautiful Roses, beginning in May and ending in December, than any other which is known to me, and for these reasons it rightly takes precedence. Nevertheless, and though I endorsed the verdict, I was thinking all the time of a rival Rose, which, though it has not the prolific powers of Gloire de Dijon, has for several summers gladdened my eyes and nose with a long-continuance of Roses exquisite in colour, form, and scent. So, wishing to have confirmation of my choice, I asked again, "And which, were there no Gloire de Dijon?" and immediately, from one of our most victorious champions, came the reply, which I hoped, and which seemed to be accepted by us all, "La France." Its charms were appreciated when it was first sent into this country, some ten years ago, by Guillot fils, from France, but fears were entertained by some of us, when we saw its bright, smooth wood, of the China and Tea-scented China strain, that it would succumb to our humidities and cruel frosts. It has proved, on the contrary, one of our hardiest and most reliable Roses; and, whether on standard or dwarf, on Brier or Manetti, it thrives in abundant beauty—most beautiful, perhaps, when grown in a large bed by itself, pegged down (what an ugly term to use in connection with such a lovely theme!), and covering the earth with its fresh, fragrant garlands. Wherever you see it, in the garden, in the greenhouse, in the bouquet, in my lady's hair, or, as now, upon the painter's page, you are bound to cry, "Vive La France!" Madame Lacharme, of more recent introduction, has also had a great reception, white Roses being rare and precious. In a favourable season, it is a very charming Rose, and is well described by a skilful Rosarian as, "white; centre the palest blush colour, beautifully clear and wax-like, cupped, exquisitely formed, and highly scented."

S. Reynolds Hole.

The Tree of the Blessed Virgin near Cairo.—There is an old Sycamore tree at the village of Metarich, a few miles distant from Cairo, and in the immediate neighbourhood of the ancient Heliopolis, whose site is now occupied by a few scattered ruins, and a picturesque monolith of over 50 yards high. Near this monolith is the present village of Metarich, an old heap of houses in a state of ruin, presenting a most wretched appearance, but surrounded, however, by large and well-cultivated gardens, in the centre of which rises, with an imposing appearance, the large tree of the Blessed Virgin (Segar el Marium), under whose shade tradition has it that the Holy Family reposed at the time of their flight into Egypt. This Sycamore is very large; seven men with extended arms could hardly encircle it. Its age is unknown, but by the concentric circle which a section of one of its largest branches, which has been detached from the trunk for some years past, presents, we may conclude that it has withstood the storms of several centuries. The present Viceroy of Egypt, at the time of the inauguration of the Suez Canal, presented this Sycamore to France, in accordance with the desire expressed by the Empress Eugenie, who went to see it. She had it surrounded with an elegant railing, and appointed two guardians to protect it and take care of the Lilies and Geraniums which she caused to be planted around it; these guardians are still paid by France. This tree is held in great veneration, not only by the Christians, but even by the Arabs. Natives and foreigners gather its leaves, to which they attribute therapeutic virtues.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. DENNING.

December 26.—Sowing some Cucumber seeds to produce plants for March. Potting Oncidium sessile in peat-fibre and Moss. Introducing another batch of Keen's Seedling Strawberry plants into a heat of 58°. Putting in a fourth crop of Asparagus, of which and of French Beans abundance must always be maintained; also Endive weekly to blanch. Turning walks where gravel has become discoloured. Preparing pit for Madame Falcot Roses. Tying down Pelargoniums after potting and stopping them. Raising first Peach-house to 53° at night, and 58° by day, fire-heat; one or two Peach-buds showing colour. Plants in flower — Cytisus canariensis and Attleana, Epacris Eclipse, Monochætum ensifolium, Cinerarias, Lily of the Valley, Begonia incarnata, Goldfussia isophylla, Thyrsacanthus rutilans, Roses, Poinsettia, Tom Thumb Pelargonium, Tydæa splendens, Schizostylis, Erica gracilis autumnalis, Salvia splendens, Primulas, Euphorbias, Callas, and several kinds of bulbs.

Dec. 27.—Putting Schizanthus in pots. Getting up a third crop of Rhubarb. Pruning and nailing Cotoneaster. Plunging Fig trees in pots in a hotbed of leaves. Wheeling manure on to vacant land. Making a new Mushroom bed, the fourth this season. Pruning trees, and whitewashing walls and cleaning woodwork and glass of third Peach-house.

Dec. 28.—Potting Gladiolus in one-third loam, scarcely one-third manure, and rather over one-third peat and sand; also more Mint. Putting in to force some Lily of the Valley, a few Ghent Azaleas and Deutzias, a batch of Jules Margottin Roses, a few Dielytras, some Cinerarias, and also Azalea vittata punctata—temperature 55° to 60° at night, and from 60° to 65° during the day. Tying Fig trees after whitewashing the walls and cleaning the trellis; also Raspberry canes. Staking late-sown Mignonette. Putting cases over Watercress to protect them from frost. Examining East Indian Orchids for scale. Raising first Hamburgh-house to 66° or 67° at night, and from 70° to 73° during the day, fire-heat; also second Vinery to 63° at night, and 68° during the day, fire-heat.

Dec. 29.—Sowing seed of Bromham Hall Melon and placing it in bottom-heat. Planting some standard kitchen Apples. Putting in Vine eyes. Pruning Apple trees in orchard. Clipping tops off shrubs in pleasure-grounds where too high. Cleaning Violets in frames; also herb beds.

Dec. 30.—Sowing fifty pots of Nemophila. Potting in Sphagnum Odontoglossum coronarium, which requires to be grown cool and shady; also second batch of Potatoes for forcing. Shifting young tree Mignonette into 6-in. pots. Dividing Irises and planting them again in border. Planting and staking Cherry trees as follows, viz.:—4 May Duke, 1 Knight's Early Black, 2 Frogmore Early Bigarreau, 1 Black Tartarian, 1 Aston, 11 Morello, 2 Florence, 2 Bigarreau, 1 Frogmore, 1 Adam's Crown, 1 Dr. Wood, and 1 St. Margaret; also the following Plums, viz.:—2 Prince of Wales, 1 Transparent Gage, 2 Early Orleans, 1 Goliath, 1 Belle de Septembre, 4 Old Orleans, 4 White Magnum Bonum, 4 Jefferson, 2 Denniston Superb, 2 Reine Claude De Bavy, 4 Early Prolific, 4 Kirke's (an excellent Plum), 12 Green Gage, 6 Coe's Golden Drop, 12 Damson, and 11 Winesour. Getting Endive into heat twice a week, so as to have it well blanched and fresh. Re-filling baskets for conservatory with Nemophila and Silene. Putting Alyssum and old Verbenas into Vinery for cuttings. Placing all Mignonette from pits on late Vinery shelves, so as to get it in the sun. Examining pot Carnations for fly. Washing Gardenias.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Cutting and Felling Hedges.—A hedge that is made of any plant that sheds its leaves in autumn should never be cut in summer or autumn until after the leaves have fallen, unless in the case of those that are strong and vigorous, and that also have attained the full size to which they are required to grow, for the reason that nothing tends to weaken a deciduous plant more than a reduction of its shoots and branches whilst they are covered with leaves. There are two distinct purposes for which garden hedges are employed, viz., as a fence and as a screen. In the latter capacity they are often used for separating the useful from the ornamental departments, and for this purpose they need not be of such a substantial character as when used as a fence; they may therefore be kept cut much narrower, and whether composed of Beech, Yew, Privet, Holly, or Quicks, they need not from the first be kept headed back so closely as if required to branch out in a way to render them more impervious; on the contrary, they may be allowed to run up more quickly, simply keeping the sides trimmed up with no more breadth at the bottom than is necessary to allow the lower branches to get light enough to keep them healthy and thriving, a condition more likely to be maintained than if cut quite perpendicularly in the old-fashioned manner with the top square, an ugly and formal shape, and one in which a hedge can only be kept healthy when allowed to grow to a very considerable breadth from bottom to top. In the case of young enclosure hedges round gardens or orchards, the first consideration is so to manage them from the commencement as to secure a close, impervious bottom; this can only be accomplished by cutting the leading shoots down sufficiently low the first or second year after planting to cause them to break back near the base, and each subsequent year to shorten the strong, erect growths, enough to cause them to branch out still further; this will have the effect of throwing additional strength into the lowest branches that occupy a horizontal position. It is the undue haste to get the hedge up to its required height too quickly, so often apparent the third and fourth year after planting by not cutting the upright growth low enough, that spoils half the hedges that are planted, especially when the lower horizontal branches are cut too closely in, a practice which tends to aggravate the evil by throwing undue strength into the upright growth. When hedges that are required for the purposes of a fence have got bare and naked at the bottom in the way that such as are composed of Quicks will do if not well managed, they should be felled down to within 9 in. of the ground. When very strong they will require a saw or a light axe, which is better; the operator should stand on the lowest side of the fence, in the ditch if there be one, so as to be well under his work, severing the whole, both the strong and weak wood, in a slanting direction, with an upward stroke, by which means he will make a clean cut, and avoid splitting the stools in the way that results from cutting downwards, and which has such an unworkmanlike appearance, and is still worse in its effects by causing the young shoots to push weaker than when the stools are cut without splitting; but as there is much in the look of a garden hedge as well as in its answering the mere purposes of a fence, the felling and retention of an old hedge in the way described is not to be recommended if it be full of gaps where there is no living wood, for, although the defect may be in some measure made good by the introduction of young plants, as is often done to fill up the vacancies, still it gives the whole such a patchy look that it should never be tolerated in a garden where there are any pretensions to an orderly appearance; in such a case it is much better to grub up the old fence and plant afresh. It is often said that there is considerable difficulty in getting a young hedge to grow in the same place from which an old one has been removed, which is true when the exhausted soil is planted in without any admixture of fresh material to renew it, but not if 6 in. of new soil, such as is procurable in country places from the roadsides, commons, or in any place where the surface spit can be spared where buildings are about to be erected, is added; should these sources fail, street-sweepings in the neighbourhood of towns or road-scrapings in the country will do mixed liberally with the old mould; 3 in. or 4 in. of rotten manure should at the same time be dug in. Many there are who manure liberally all the other plants they cultivate, and who never think of giving anything to encourage the growth of a hedge, which, not only in the first preparation of the ground, but for some years until fully grown, will well repay for liberal manuring, especially where Quick or Holly is used.

Planting new Hedges with various Materials.—The present is a good time for preparing the ground, and planting Beech, Privet, or Quick, and where such work has to be done no time should be lost in carrying it out. In the case of Holly, Yew, or any other evergreen, the planting should either have been done earlier in the autumn, or had better be deferred until spring. In the formation of a hedge, it frequently becomes a question of what to plant. There is nothing equal in appearance to green Holly, nor is there anything that makes a more impervious fence when it gets sufficiently large, if the land be dry, either naturally or made so by draining; even if of a poor sandy character, if plentifully manured, Holly will grow fast after the first or second year, when it has made plenty of roots and got established; White Thorn or Quick stands next in point of merit, where afforded similar treatment as to a dry bed and plenty of manure, but it does not make so much progress if the soil be too sandy. Beech will succeed in almost any place where there is no stagnant water, or the opposite extreme of being excessively dry; the worst of Beech in a garden is it causes a continual litter for some weeks in the spring, as when kept cut it does not shed its leaves in the autumn, although for shelter this is an advantage. For screens or divisional hedges such as those already alluded to, there are many plants that may be used; where an Evergreen to grow up quickly is required, of which nothing surpasses the oval-leaved Privet (Ligustrum ovalifolium); it will grow doubly as fast as the old variety, and

is stout enough to support itself against the strongest winds when allowed to grow to a height of 8 ft. or 9 ft., and kept out into not more than 2½ ft. through at the base; whereas, the ordinary Privet would be useless so treated, unless some strong growing plant, like Quick or Beech, was planted with it. The objection to common Privet is, that when used mixed, as at one time was customary, in winter one part of the hedge is green, whilst the other is naked; but for appearance, in screens of this kind Holly again has no equal. American or Chinese Arbor-vitæ, Cupressus Lawsoniana, and other kindred plants, make a screen at once, but have the fault of getting bare in time, unless allowed to extend to greater breadth than is often consistent with the purposes for which they are wanted. In all localities where they will grow freely, and can be permitted to attain a considerable breadth, and where there is no particular hurry in getting them to a good height in a short time, Rhododendrons are very suitable, and always look well; there are now almost unlimited quantities of seedlings little inferior for general effect to the named varieties that can be had cheap, and when in flower make a good display. Where not wanted to grow above 5 ft. in height, Pyrus japonica makes a good hedge, but it should not be trimmed in too closely; it is very effective when in bloom, especially if the blush and the crimson varieties be planted alternately.

Rose Hedges.—These should not be used where a screen impenetrable to the eye all the year round is wanted, or where they are required to grow above 4 ft. or 5 ft. high at the most, unless a wire trellis is used to train them on; but when thus accommodated, such kinds as the Ayrshire, crimson Boursault, the strong-growing Noisettes, the more vigorous Chinese varieties (such as the old blush and crimson sorts), Gloire de Dijon, and several strong hybrids, if judiciously arranged in the planting, have a charming effect, many often keeping on flowering from spring to late in the autumn. These will look better and are more appropriate than the more formal-growing Hybrid Perpetuals, which are sometimes used in this way. If for a low hedge the Hybrid Perpetual sorts be employed, such varieties should be selected that are strong growers and the most continuous bloomers, but where there is no support to be given, such as the trellis above alluded to, I prefer the old crimson and blush Chinese; the individual flowers no doubt are not equal to those of many others that might be chosen, but for the quantities of bloom that are produced, in addition to its continuity—for they will hold on later in the autumn, standing more frost without injury than any others I have ever tried—they are unsurpassed. The principal thing to be observed in planting Rose hedges is to prepare the ground well at first; the soil should be of a strong, holding character, well drained, and made rich by digging in plenty of manure in the first instance, and liberal top-dressings yearly afterwards; the plants should also be on their own roots to avoid suckers. In cutting to the required height and shape, the pruning-knife should be used instead of the shears, as the latter give too formal an appearance; by using the knife, a portion of the old wood can each year be more easily got out low down, leaving all the strong young shoots.

Forcing Houses.

The demand for flowers, both for cutting and decorative purposes, has now become so great in most establishments, that all pits and houses where warmth can be had are generally taxed to the utmost to keep up a supply. Much may, however, be done to relieve the pressure in this direction, by selecting such plants as naturally come into bloom, and by taking advantage of the shelter afforded by any sheds, cold pits, or houses, in which to place such plants as Lilacs, Weigelas, hardy Azaleas, Deutzias, Solomon's Seal, Dielytras, Lily of the Valley, and many others of a deciduous character, all, or any of which intended for forcing, should be got up at once and potted, as when left in the open ground until it is time to start them, they take much more heat to induce them to bloom. The great thing in forcing all kinds of plants is to get their roots well at work before the tops are subjected to much heat, and in the case of such hardy subjects as the above, this may readily be done by plunging them in a bed of leaves, either under cover or in any sheltered spot out-of-doors, whence they can be taken to the forcing-house as wanted. By adopting expedients of this kind, their period of flowering will be considerably advanced, and much valuable room under glass will be rendered available for other purposes.

Rhododendrons and Kalmias.—Among hardy plants few are more useful, or produce a more brilliant display, than Rhododendrons, and as many of them may be got into bloom with the aid of only very slight artificial heat, they are the best subjects to start with for embellishing conservatories, or supplying cut flowers till Azaleas come in. The different varieties of caucasicum are among the most suitable for this purpose, especially where delicate shades of colour are required, but for general effect, such as Broughtonianum, Altaclerense, Nobleanum, Mars, and Stamfordianum should be selected. These produce a grand effect as pot plants, but from having such enormous tresses of flower, are generally too large for cutting. Any of the above, and many other very beautiful kinds, may soon be induced to unfold their blooms by at once placing them in a moist, warm temperature, while others to succeed them will come on naturally by March, if afforded the shelter of an ordinary pit or frame. Kalmias, although slow forcers, are always highly prized, their lovely crimped flowers rendering them great favourites. If any of these can be plunged in bottom-heat, such as a bed of leaves or tan affords, with just the shelter of a deep pit, they will require but very slight additional warmth to have them in bloom any time after February.

Hyacinths, Tulips, Narcissi, &c.—The earliest potted bulbs of these will now be sufficiently forward to introduce into heat, but in no case should they be subjected to hard forcing, as when that takes place they never come so fine or last anything like the time they otherwise would. In taking them from under cover of the ashes or other material the pots may have been plunged in, they should be removed to a frame or stood where they are not all at once subjected to extreme light, or the tips of the tender blanched leaves will become damaged from the sudden exposure. When all danger of this is over they cannot well have a position too near the glass, and should therefore be placed on shelves in any forcing-house or cool stove to bring them gradually on. Others for late blooming should be potted up at once in order to afford them plenty of time to get well established before top growth takes place. Bulbs of this kind make a far better display when potted three in a pot than they do in the ordinary way of growing them singly, and as very little extra root-room is required, this is much the best way of treating them. For Hyacinths deep 7-in. pots are amply sufficient if potted in rich soil and well fed with liquid manure whenever they require water, while for Tulips and Narcissi a size less will suffice.

Gladioli.—Although the early-blooming varieties of these are not so stately and striking as Gandavensis and the various hybrids that have been raised from it, they are most valuable for greenhouse decoration, as they may be had in bloom any time after March if potted up at once. The soil best suited to grow them in is rich sandy loam, in which the bulbs should be covered to the depth of an inch or so, having first shaken a pinch of sharp silver sand over them to keep them from rotting. All the ramosus, blandus, and cardinalis sections are suitable for pot cultivation, as are likewise byzantinus and communis, the rich crimson of the former contrasting most effectively with the pure white of the latter. As the whole of the above are of very small growth compared with the autumn-flowering varieties, they are admirably adapted for association with other flowers in the decoration of vases, as they last almost as long in perfection in water as they do on the plants. The best way to grow them is to pot about six bulbs in a 6-in. pot, and then plunge them in a bed of coal ashes under shelter of a pit or frame, where they should stand without water till they get fairly into leaf, after which when growth becomes active they will take liberal supplies. Gladioli are rather impatient of artificial heat, but will bear moderate forcing, and if any are required extra early they may at once be plunged in a bed of leaves or other gently fermenting material where they can be kept cool at top. This will induce the formation of roots without exciting the bulbs to push much into leaf, which is a matter of great importance in the cultivation of this class of plants. Once the pots are well filled they may be brought gradually on in any position near the glass where they can be accommodated with a temperature varying from 50° to 60°.

Lachenalias.—The earliest potted bulbs of these ought now to be showing bloom, and in order to have the stems of these sufficiently firm to stand erect without support, they should be placed on shelves in cold pits or frames close up to the glass; or, better still, plunged in cinder ashes, as then their roots are kept in a more uniform state of moisture. Any attempt at forcing Lachenalias is sure to end in failure and disappointment, as the slightest artificial heat, unless attended with an abundance of fresh air, draws them up, and gives them a very weedy appearance. The best way of getting them into bloom early is to start a part of the stock immediately after they have had a fair rest, and let them come slowly and naturally on in any cold frame till they begin to show flower, when they can at once be removed to the greenhouse, where they will then last a long time in perfection. Lachenalias seldom get anything like a sufficient supply of water, and, like most other bulbous-rooted plants, get ripened off much too quickly, the effect of which is to sadly diminish their blooming capacity. If properly drained, water can scarcely be given them too frequently after the flower-stems make their appearance, and up to the time when they begin to die away, after which

the soil should be kept in a healthy, moist state till the leaves show symptoms of ripening, when they may be slowly and gradually dried off. As the pots will now be well filled with roots, liquid manure will be of the greatest assistance to them, and this should be continued at alternate waterings till they have ceased blooming.

Vallotas.—These, too, are frequently subjected to a drying process, a course that is most detrimental to them, as then they have most of their large fleshy roots, whereby they are considerably weakened. As plants of these are now in a less active state than at any other time, what re-potting or division they require had better be done at once; they may be shaken out from the old soil with as little injury as possible. Vallotas do best in a mixture of loam, sand, and leaf-mould, in which they should be potted somewhat firmly in well-drained pots, and afterwards stood on the hard floor of a pit close up to the glass, or on the back shelves of a greenhouse; but the former position is the most suitable, as they remain in a more uniform condition of moisture than when exposed on dry, airy shelves. In wintering Vallotas the soil should be kept just moist enough to preserve their leaves in a healthy green state and the bulbs plump and solid, a condition that enables them to flower better than when dried off in the ordinary way. If potted singly, from 6-in. to 8-in. pots will be found to be sufficiently large, and if the bulbs be small, three in the latter size produce the best effect. Any offsets that may be taken from them during the process of re-potting may be planted out in prepared beds in frames, or potted thickly in stove pots or pans to grow on for future use.

Ixias, Sparaxis, Babianas, &c.—For pot cultivation there are few bulbous plants more beautiful or generally useful than Ixias, Sparaxis, and Babianas, all of which are alike valuable either for greenhouse decoration or supplying cut flowers. Although perfectly distinct in appearance, they require the same treatment, and should at once be potted in rich, sandy soil, and kept close under cover of a cold frame or pit plunged in coal ashes, where all the attention they require till they get into leaf is to preserve them from frost and vermin; 6-in. pots are quite large enough for them, and in these from six to twelve bulbs should be planted, according to the strength and size of the different varieties. If the soil be in a moderately moist condition, as it should be at the time of potting, no water will be required till they have started well into growth, and even then it must be given but sparingly. All the above are nearly hardy, and any small bulbs there may be on hand can be planted on dry, sunny borders, in light, sandy soil, close under walls, and will be found most useful for cutting after those in pots in the greenhouse are over.

Tritonia aurea.—As an autumn-blooming plant the Tritonia is one of the most serviceable, and affords a shade of colour that we stand much in need of at that season for associating with Achimenes, Zonal Pelargoniums, &c., with which it blends well and forms a very pleasing contrast. Where fine masses of this are required the roots should be disturbed as little as possible after they once get established. The best way to treat them is simply to reduce the ball by removing as much of the old soil as can be done without breaking the rhizomes, and then to shift them into a larger-sized pot, using good fibry, mellow loam for the purpose. In cases where an increase is desired they should be shaken out, that they may be divided in the most advantageous way, and when potted, placed in any cold frame where they can be well attended to with the syringe after they get into leaf to keep down red spider, an insect to which they are particularly subject.

Fuchsias.—In order to obtain early cuttings of these, it will now be necessary to get a few old plants into heat to induce them to break. Almost any place where there is sufficient moisture will do to give them a start, after which they must have a light, airy position to induce a firm, short-jointed growth. Any that were struck in the autumn should be grown steadily on by affording them the requisite pot room as they advance, and a temperature of from 50° to 60°, according to the state of the weather. It often occurs that old plants laid by in sheds or other draughty positions out of sight are allowed to become too dry, and when this takes place, many of the branches die back to the main stem and even down to the roots. To save any loss this way the pots should be plunged in damp ashes or some littery material, to prevent the dry air from playing upon them. —J. Sheppard, *Woolverstone Park.*

Hardy Fruits.

The extreme mildness of the weather up to the present date has caused the buds of fruit trees to be in as advanced a state as they usually are at the end of January, but it is to be hoped we are on the eve of a change to frosty weather, which will give a salutary check to any further advancement till the winter is over. Work generally is likely to be very backward on account of the continuous rains which we are experiencing, and the one early autumn operation of most importance, viz., planting, it has been simply impossible to accomplish, so that when drier weather sets in this must have first attention; spring planting of fruit trees is a great mistake, and should never be done except when autumn planting has been out of the question, which has been the case this year, certainly ever since the last week of October. Push on the pruning of all kinds of fruit trees whenever the weather is mild; Peaches and Nectarines may be left till the last, but I would recommend that these be pruned much earlier than is generally the custom, as it must be injurious to cut the trees when the sap is in full motion, and the buds expanding; indeed, I believe that to the debilitating effects of late pruning canker and gum are almost solely attributable. Follow former directions as to dressing the trees, walls, &c., with insecticide, and so save an immensity of labour and anxiety during summer through freedom from insects. At this season, if opportunity permit, much may be done to improve old or impoverished fruit trees by forking over the ground about them, and giving a thick mulching of well-decayed manure, and if previous to the mulching a coating of soot or charred vegetable refuse, or of the two combined, be applied, the improvement in the trees would be more permanent in character. Rather than attempt to renovate old or Moss and Lichen covered bush fruits, such as Gooseberries and Currants, it will be much better to make a new plantation, the ground for which should be deeply trenched and a moderate proportion of manure worked into it, for though as a rule fruit trees are best without manure being mixed with the soil when first planted, my experience is that an exception may advantageously be made in favour of Gooseberries and Red and White Currants. Black Currants grow more luxuriantly and are therefore better without it. Raspberries will do with any quantity, but should have it applied as a mulching only. The fruit-room should be closely examined at least once a week, and every speck of decay removed. Keep the ventilators closed in damp weather, but give air for an hour daily when the atmosphere is mild and dry. The best Pears we have now in use are Winter Nelis, Easter Beurré, Glou Morceau, Ne Plus Meuris, and Knight's Monarch.—W. Wildsmith, *Heckfield.*

WEATHER WISDOM.

On December 11 Mr. Robert H. Scott, M.A., F.R.S., Director of the Meteorological Office, lectured before a large audience at the London Institution on "Weather Knowledge." He said that gardeners, fishermen, gamekeepers, shepherds, and the like, can often, from local signs, guess the weather for their own neighbourhood a day or two ahead. Nay, for a particular district, they can do this in many cases better than the scientist with all his apparatus. Savages are wonderful weather-prophets, in like manner, within a certain range. The lecturer cited a letter to himself from the late Commodore Goodenough, saying that when on board the Pearl in the Pacific he fell in with some fugitive slaves from Samoa, who without instruments of any kind had navigated a canoe 1180 miles by sheer dint of what the Commodore called such a knowledge of weather signs as must have been tantamount to a sixth sense. They all knew the proverb that pigs can see the wind, and their carrying about straw against bad weather had often been spoken of as a valuable prognostic. Birds of passage, also, seeking refuge from colder regions in warmer ones, afforded useful indications of the character of the coming season. This was particularly so with such birds as wild swans and other waterfowl. By coming south they tell us of the sharp winters brewing for us in Russia and Lapland. The great difficulty in dealing with these prognostics and with popular weather-wisdom in general, arises from their being so peculiarly local. One who knows well the signs in one district will be quite at a loss in another. The non-instrumental signs might be divided into those taken from the clouds, from the landscape, and from optical phenomena. Mr. Scott said he purposely omitted those drawn from animals and plants as not being so readily explicable on physical principles. The clouds were the most valuable signs, for not only did their motion show us which way the wind was blowing above our heads while we were sheltered by hills or buildings, but their changes also in form and size told us of operations going on in the upper strata of the atmosphere of which we could gain no knowledge in any other way. He was not now speaking of such phenomena as the small cloud "like a man's hand," which in the Mediterranean portended violent thunderstorms, but of more general indications. It was well to be warned that the regular absorption of clouds at certain times of the day was no sign of permanent change of weather. They all knew that the mornings of some of the hottest days in summer were often very foggy, and, conversely, after a wet day we had not uncommonly a clear night, succeeded by a return of

clouds and rain next morning. The lecturer entered at length into the *rationale* of these and other phenomena of which he spoke. The "cirrus," however, or mare's tail clouds, were most important signs of bad weather, although they were not infallible prognostics of a storm in the place where they are seen. Mr. Scott had noticed in the Tyrol that in summer cirrus often preceded thunderstorms, the fact being that it showed the presence of wind aloft, but the friction caused by the mountains prevented the current, which broke up the clouds into cirrus, from attaining the force of a gale below, whilst, nevertheless, it had power enough to cause collisions in the strata above and to produce electrical discharges. The filmy network gradually becomes denser and denser, turning into what is called the "cirro-stratus" cloud—a form with which we sometimes see halos round the sun and moon invested—and finally into the "nimbus," or rain cloud. We all knew that small fragments of cloud scudding below wide-spread cloud-sheets or heavy woolpacks are unfailing signs of storm, while the woolpack cloud itself was a sure indication of great cold in the region above it. This was most characteristically shown in the showery, sleety weather of March, with north-west winds. He might here remark on a very peculiar appearance of cumulus, with its ragged surface below instead of above. This is known as the "pocky" cloud, and is recognized in the Orkneys as the sure precursor of a heavy gale, a relation easily intelligible on the idea that the rounded form of the woolpack is due to the introduction of a mass of condensed vapour into a very cold atmosphere, and that in the case of the pocky cloud there is a moist layer above seeking to force an entrance into a much colder stratum below. Once this entrance gained, sudden condensation follows, and that disturbance gives rise to a gale. The weather signs taken from the landscape were next enumerated and discussed, such as its being hazy or clear, and the appearance of a cap of cloud on a hill top, the value of which latter prognostic was proved to vary with circumstances. A cap on a hill was not a sure sign of rain, but the true rule is that caps on low hills are a bad sign, while caps on higher mountains are not so. The observations of Prof. Piazzi Smyth on Teneriffe, and of others on Chimborazo, &c., were cited in proof of this rectification of the old saw. Optical signs of the weather, to which the lecturer now passed, mostly concerned the condition or amount of aqueous vapour in the air. The colour of the sky, one of the most trustworthy prognostics, was regulated entirely by the state of condensation of the suspended watery vapour. The successive layers of air charged with vapour stop the different rays of light; firstly, the blue, then the yellow, and lastly, the red. When the sun is near the horizon, the rays have to traverse a great thickness of vapour, and so the last rays at sunset and the first at sunrise are red. The truth of the old rhyme, "Evening red and morning grey," &c., may be thus explained. The disappearance of clouds at sunset is a sign of fine weather, for it is due to the sinking of the clouds into the warmer strata near the surface of the earth, where they are evaporated. These clouds in disappearing leave behind them a large amount of vapour in the air, and the sun's rays shine red through this medium. In the morning the air is comparatively dry after the cold of the night, and the blue and yellow rays are not stopped in their transit, so that the clouds look grey from a diffused light. Conversely, a grey sky in the evening is caused by the presence of such a mass of clouds as to stop the sun's direct rays, and to allow nothing but diffused light to pass, while in the morning the red and lowering tints of the clouds show that the air is full of watery vapour, close to its point of condensation.

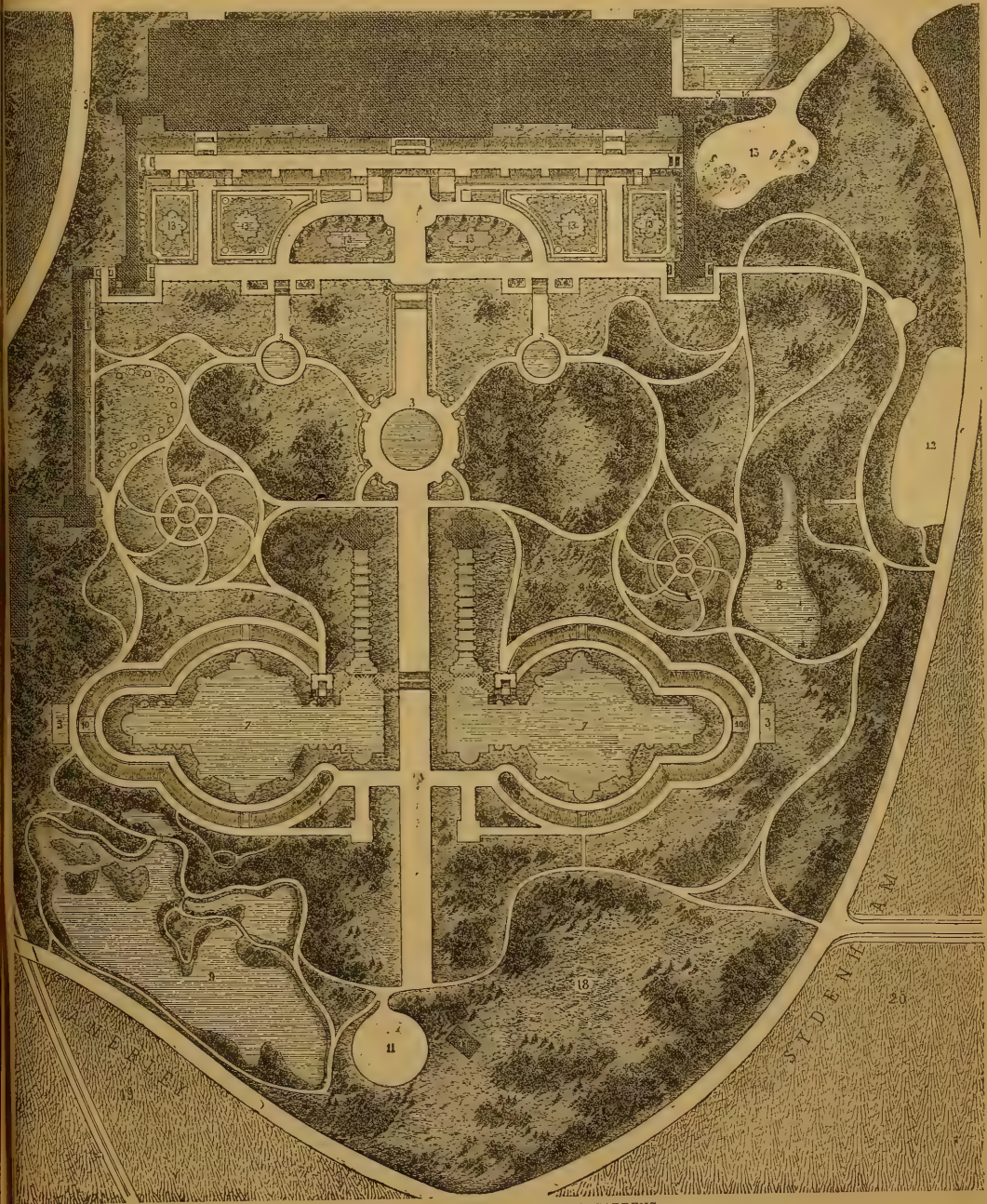
Cocoa-nut-husk Flower-Pots.—Some of the Centennial exhibitors used with great success the husk of the Cocoa-nut in the manufacture of flower-pots; this husk, which is nearly 1 in. thick, is cut across the middle, so as to make two baskets, and each portion is suspended by wire. Its porous character seems to fit this material to this purpose, and its ornamental appearance, with something of a rustic character, makes it superior to the most elaborately painted porcelain. Plants are said by the "Country Gentleman" to thrive admirably in these pots.

Soil for a Rock Garden.—I am constructing a rock garden, and should be much obliged if any one will inform me of the best kind of soil for it. There is plenty of peat not far distant, but the garden is on a sandy loam.—E. I. H. [For a great number of rock plants almost any kind of open soil will do; and in a free loam numbers of Alpine plants delight. To have a good depth of soil, and that so arranged that the roots may descend deeply into it, and find an abundant supply of moisture during the heats of summer, is of greater importance than the kind of soil. If convenient, however, there should be peaty spots for peat-loving kinds and various bulbs.]

Cinchona Plantations.—The departmental reports made to the Government of India show that in Sikkim 385,000 Cinchona trees, chiefly the Red Bark variety, were planted out in the financial year 1874-75, bringing up the total number in the permanent plantation to 2,765,000. Though the Red Bark is not so rich in quinine as the Yellow variety, it yields a greater quantity of alkaloid, which is an equally efficacious febrifuge. The area of land under Cinchona in the Neilgherry Hills is reported at about 9-00 acres, part Government and part private plantations. During the year 28,659 lb. of Mossed Bark were shipped to England, and the prices averaged about 4s. per lb.—an advance of more than 1s. on the average of the preceding year.

PLAN OF THE CRYSTAL PALACE GARDENS.

It is unfortunate for the art of landscape gardening that plans are ever submitted for adoption to those who do not know the simple elements of the art. We fear they are often judged as any conventional design would be, and that the most elaborate, that is to say, the worst, is generally preferred. A moment's reflection should suffice to show that the plan of a garden has nothing in common with any other kind of design. The design for a wall decoration, or for the façade of a house, gives at once a fair idea of what the result will be, and, in judging, all can see that on which to form an opinion; but if the plan of garden be judged on the same principles, mistakes are almost certain to occur. The flowery scrolls that please those who can find pleasure in such things will probably, when transferred to the ground, prove disappointing and monotonous. The geometry that does not offend the inexperienced eye in looking at the plan will probably prove so much barren confusion when illustrated in earth and stone and trees. If we could see the plans of a number of really beautiful gardens, or parts of gardens, we should see at once that they were utterly unlike any "design" in the ordinary sense of the word, and that few or no geometrical lines occurred in them. The plan of the grounds of the Crystal Palace could not be classed among such. There are, from Versailles to Caserta, a great many ugly gardens in Europe, but at Sydenham is the greatest modern example of the waste of enormous means in making hideous a noble piece of ground. It has been called a work of genius, but it was only the realization of a mean ambition to outdo another sad monument of noble means prostituted to a base use—Versailles. But Versailles is a relic of past ages, and was the expression of such knowledge as men possessed of the gardening art at the date of its creation. Backward as we are now, our means for garden embellishment are increased a hundredfold since Versailles was designed, and there is also a vast improvement in garden design. Therefore this modern illustration of a barbarous style has none of the excuses which might be urged for Versailles. Instead of a desire to express all that we at present know of pure garden design, and of the wealth of beauty now within our reach, the major idea was to out-Versailles Versailles. There being many mouldering water-basins there, it was thought well to make some vastly bigger. Versailles having numerous and tall water-squirts, the best way to glorify ourselves at Sydenham was to make some unmistakably bigger! Instead of confining the purely geometrical gardening to the upper terrace, by far the greater portion of the ground was devoted to the more antiquated and baser features of a changeless and stony style of garden design; nearly in the centre are those vast fountain-basins, with their unclean water and enormous display of pipes. Surely these water-basins are more ugly and barren of interest than the crater of a volcano. The extensive contrivances to enable the water to go down stairs (prettier than the squirting, it must be admitted), the temples impudently prominent, the statues, the dead walls all help to add to the distracting elements of the central region. The special gardens, too, such as the Rose garden and temple, which would have been better if veiled from the great open central scene, are made as prominent as possible. The redeeming features were here and there charming bits of good gardening and good planting, but the vast geometrical system overshadows the whole, and only towards the outer margin did one feel free from this incubus. Here was one of the finest marginal plantations ever made; indeed, it was the best we ever saw. Those who knew it, and enjoyed the many fine shrubs and trees it contained, will regret its recent destruction, to provide for the site of a number of villas, which now stare naked into what a few years ago was the most beautiful scene in the grounds. The water, in the more naturally designed portion of the grounds, was well done; had it not been cramped by the space required for the enormous formal water basins higher up in the ground it might easily have been made one of the finest pieces of artificial water possible, the position in relation to the Palace being so good. The upper terrace was also of its kind well designed, and not without beauty almost from the first, owing to the presence of a number of beautiful evergreens which modified the effect of the usual elements of these gardens. The present superintendent has



PLAN OF THE CRYSTAL PALACE GARDENS.

Principal entrance. 2. Railway station and corridor. 3. Water basins. 4. Reservoir for supplying the fountains. 5. Tower, with reservoir at top. 6. Chambers from which issues water for the Cascades. 7. Large Water basins. 8. Lake. 9. Large Lake. 10. Water basins. 11. Roundabouts, Swings, &c. 12. Site for greenhouses, &c. 13. Fountains. 14. Pump for supplying reservoir No. 4. 15. Menagerie. 16. Pump for supplying reservoir No. 4. 17. Artesian well for the supply of the large fountains with water, which is raised by pumps Nos. 14 and 16 into reservoirs No. 4 and 5. 18. Cricket ground. 19. Anerley. 20. Sydenham.

introduced a variety of improvements in the flower gardening, &c., but great changes will have to be made as regards some of the points above alluded to before the gardener can have power to influence for good the general scene. No amount of skill, for example, could influence the view across the dismal water-basins and the dead walls near! The navvy and his barrow must be called in again before any beautiful gardening is possible here. The design and plan of the Palace itself is without the scope of the present notice, but a word of praise must be given to the arrangements and excellent effect of the vegetation therein. We have seldom noticed in any building such charming effects from Ferns, water-plants, and the like as at Sydenham, and many will regret that the burning of one wing curtailed so much well-embellished space. We have said nothing of the tremendous and unending cost of keeping in repair the immense extent of stonework, piping, water-works, temples, walls, water-stairs, machinery, &c.; this alone, if there were not other good reasons, would render the system foolish, and, in the end, impossible.

COTTAGE GARDENING.

Broccoli.

There is vast confusion among the different varieties (so called) of this vegetable, but the five following sorts, if obtained true to name, may be relied upon to furnish a supply from November to May, subject, of course, in some respect to the weather:—Veitch's Autumn Self-protecting, Snow's Winter, Early Penzance, Cooling's Matchless, and Cattell's Eclipse. Sow in March and again towards the end of April, in well-prepared land, in drills 8 in. or 9 in. apart, and 1 in. deep. When the plants are large enough to handle, prick out some of them, if they stand at all thick, on to any vacant piece of ground, 3 in. or 4 in. apart; many plants acquire a weakly constitution through remaining too long in thick seed-beds. Commence planting them out finally in May, the largest first, and follow it up as opportunities occur and land becomes vacant until the end of July; a better succession will often be obtained this way than if all were planted at once or twice with an interval of several weeks between. As regards the preparation of the ground, the first point to ascertain is the character of the soil, in order that the best course of treatment may be adopted. One cultivator will plant his Broccoli in the hardest ground, and, if need be, make the holes with a crowbar; whilst another will always manure and dig his land before planting. Such differences of opinion may appear at first sight irreconcilable, but it is entirely a question of soil and situation. Some years ago when I had to deal with a light, hungry soil, I used to dig out holes 18 in. deep, put a good forkful of manure in the bottom of each hole, return the soil previously dug out, press it down with my foot, and plant just over the manure—and I found that the Broccoli succeeded very well under this method; but here I never dig or manure for Broccoli, for the simple reason that I find I can obtain better heads without, besides securing the well-matured growth that invariably follows the planting of this vegetable in a firm soil, and enables them to pass uninjured through a severer winter than if some pains had been taken to cultivate and manure the land just previous to planting; at the same time, it must be borne in mind it is only on land that has been at other times well manured and deeply worked that this result can be obtained. To plant with a crowbar on poor and unworked land would probably be a failure, unless liquid manure could be freely given. In shallow, hungry soils manure and dig just previous to planting the crop, but on a deep, unctuous loam that has been long under cultivation hoe up the surface deeply, draw drills 3 ft. apart, and plant 2 ft. between in the rows. The same difference of opinion exists generally amongst cultivators as to the best mode of preserving the plants through a severe winter. One recommends the heeling in of the plants with their heads to the north in November, as by so doing, although your Broccoli will, perhaps, not be so large, you will at least save some; whilst the advice of another is to leave the plants as they are, but protect the stems. In my opinion, under certain circumstances, both plans may be successfully followed. In adhesive land, when even if well drained it is always damp in winter, I should not lay them down, but, on the contrary, I should raise ridges of soil round their stems, and when frost sets in, if unaccompanied by snow, cover the plants with a few evergreen branches or dry fronds of Bracken. Since I have adopted this mode of treatment I have seldom lost any. On lighter, drier land the plants may be heeled in with advantage, which latter operation is performed in this way:—Begin at the north end of the first row; open a hole by taking out two or three spadesful of soil on the north side of the end plant, then pass to the south side of it, press the spade into the ground 8 in. or 9 in. from the stem, and turn the plant over on to its side, and the ball will slide into the hole previously made. The soil taken from the north side of the next plant may be laid over the stem of the first one, and so on all through the bed. I wish to draw special attention to Veitch's Autumn Self-protecting Broccoli, as it should be found in every garden where autumn vegetables are in request. If sown in March and planted out in June, it will produce fine white heads in November and December; and as the leaves lie so closely over the hearts, a few degrees of frost will not affect them. It will be found a very good companion to the Autumn Giant Cauliflower.

Spinach.

A small bed of autumn-sown Spinach will supply a quantity of dishes throughout the spring, at a time when a change of vegetables becomes desirable. Sow the prickly-seeded variety the last week in August, or in early situations the first week in September; the earlier it is sown the sooner will it run to seed the following season. As regards the preparation of the land the same remarks will apply to a great extent to Spinach as I have recommended for Broccoli. I generally sow Spinach after early Potatoes, without any special preparation beyond raking the surface evenly and smoothly. Sow the seeds thinly in drills 1½ in. deep and 1 ft. apart, and thin out the young plants to 4 in. apart; the surface of course must be often stirred with the hoe to maintain the soil in a healthy condition, but I need scarcely mention that this should never be done when the land is wet. In gathering the produce for a certain period pick off the largest leaves only, but when the plants begin to run in spring the best plan is to cut off the whole tops of the plants down to within 1 in. or 2 in. of the ground; a new growth will then take its place, that may, when sufficiently large, be served in the same way, until finally the roots are exhausted, when of course the remains should be cleared off and the land well manured and cultivated for the succeeding crop. It is the natural tendency of every plant in spring and early summer to throw up flowers and produce seed, but it is far better to divert the strength of all culinary plants that are esteemed for their leaves only into the production of young succulent growth, especially as this not only tends to increase the bulk but also extends the season of bearing of the crop. Summer Spinach is in a general way not a profitable crop for a small garden. Where it is desired, however, it may be used as a catch crop between rows of Peas, but unless the soil is deep and moist, Spinach in summer will bolt almost as soon as it is fit for use. In special cases where a succession of Spinach is required through the summer the New Zealand Spinach will be found to give satisfaction. Select a warm site and prepare hills as for Ridge Cucumbers; plant half-a-dozen seeds in April round the top of each hill, and if all of them grow thin out to three, of course leaving the strongest. This Spinach is commonly sown in heat in small pots and planted out in May, but it will grow just as well out-of-doors, only it does not come into use quite so early. Hundreds of young plants generally come up in the beds where it grew the previous year, but they will not transplant well on account of the paucity and length of their roots. New Zealand Spinach will continue bearing till the frost cuts it off in October.

Celery.

The Sandringham Incomparable White is the best Celery for early use, and, in fact, altogether the best White Celery for small gardens. It is very dwarf and robust in habit, and if planted in single rows, they may be placed nearer to each other than those devoted to the growth of the taller sorts. If

there be a frame, some effort should be made to start a gentle hotbed early in March, as so much can be effected with only a few leaves and litter thrown together to cause a gentle heat. Where this convenience is at hand, sow a few seeds for the early crop in a pan or box. The soil should be rich and light, and pressed down firmly, the surface made level, the seeds sown thinly, and covered lightly with fine, light soil, and the soil kept in an equable state as to moisture. When the plants come up they will be frequently very thick; in such cases thin out the weakest-looking to give the remainder a little more space till they are of sufficient size to handle, which will be when they have made three leaves; they should then be pricked off 3 in. apart into boxes, or, better still, if possible, prick them into small pots filled full of warm, light, rich soil, one plant in the centre of each pot, and place the pots in the frame in a light, warm position, taking care that they do not suffer from drought till they are finally hardened off and planted out. If there be only a hand-light, a hole might be dug in the ground in a sunny corner, filled with fresh manure, covered with 6 in. of light soil, in which a pinch of seed should be sown, and covered with a hand-light. This treatment will give a much earlier start than if the open-air seed-bed be altogether depended upon. In the latter case the first week in April will be sufficiently early, and, with the white, a few seeds of Leicester, or some good red kind, should be sown for late use. The seeds usually grow freely enough if the beds be kept moist, and the weakly plants must be thinned out early, as it is bad policy to leave them to draw each other up weakly. Select an open site with a good hard bottom for the nursery bed; place on it 4 in. of the richest material that can be procured, but at the same time there must be no rank manure mixed with it. Old, thoroughly decayed vegetable matter, with a little charred or burnt material mixed with it, will answer admirably for the purpose: press it down moderately firm, and prick out the young plants 4 in. apart. If the weather be very bright they must be shaded for a few days till they get established, and they will at all times require plenty of water. Should a few plants have been started in boxes or pots in the frame for an early crop, they will be fit to go out in May, and on no account must they be allowed to be starved or checked for want of water; and in some cases it may be advisable to pot them into 48-sized pots, if there be the least fear of their becoming pot-bound before the trenches are ready; but the kind I have named (the Sandringham) is not nearly so liable to bolt as the other varieties I have grown in this way. To obtain very late Celery for soups, sow a pinch of seed of a good keeping sort (the Sulham Prize, for instance) about the end of May. Not only Celery, but all biennial plants are less inclined to flower when sown late. The late-sown plants will require the same attention in thinning and pricking out into nursery beds as those raised earlier. Celery is usually grown in trenches for the double purpose of supplying it easily and abundantly with water, and for the facility this mode of planting gives for earthing up. The trenches may vary from 6 in. to 15 in. in depth, according to the season of the year and the nature of the soil, and from 1 ft. to 3 ft. or more wide, according to the number of rows planted in each trench. In light, dry land there is sometimes an advantage in planting two or more rows in a trench, of course making the trench of a corresponding width, but in damp, heavy land single rows keep better, because in winter the surplus water drains freely away. Rank manure should never be used in Celery trenches, for not only does it tend to spoil the flavour, but it acts prejudicially in other ways; therefore, whatever the kind of manure employed, it must be thoroughly decomposed. A good thickness of old hotbed manure will be found to afford good nutriment to the plants, and to this may be added, if the increase in bulk be desired, any refuse vegetable matter that has gone through a regular process of fermentation and decay. The trenches may be prepared any time when the land is vacant (the earlier the better), as it frequently happens that a crop of Lettuce or Cauliflowers may be taken from the spaces between the rows of Celery before the earth in which such crop may be grown is required to blanch the Celery. If the planting be done during dry weather, water the trenches well early in the morning and put out the Celery in the evening following. They must be carefully lifted from the nursery-bed with all their roots intact. This can easily be done by running a steel fork in a horizontal position under them to loosen them and partially raise them up, when they may be carefully separated with the hands, all small offsets being removed at the same time with a sharp knife. Plant them 9 in. or 10 in. apart and about 2 in. deeper than they were formerly, finishing off with a good soaking of pond or river water. The early-sown plants will be ready to go out in May, and the main crop towards the end of June, whilst the last sown crop, to come in for late spring use, will be put out early in September. This latter crop will, of course, never attain the same development as those previously planted; and its object is to bridge over the season (more especially for flavouring and cooking purposes) till the early crop of the following season is ready. Some difference of opinion exists as to the best mode of earthing up Celery, and the time such operation should be performed. I consider a mulching of decayed manure very beneficial shortly after planting, and a frequent use of the Dutch hoe to loosen the soil. Of course each time the hoe is used a little loose earth may find its way round the plants, but beyond this I do not recommend earthing up till within six weeks of the time the early crop may be required, or, in the case of the main crop, till it is nearly full grown, then earthing it up at one operation; and this should be done when the soil is in a working condition. It is pretty generally known that exposure to severe frost will spoil Celery, therefore it will be necessary to provide some protection—the lighter and drier the better. During the growing season house sewage or liquid manure of any kind (not too strong) may be freely applied, and soot may be occasionally scattered along the rows with beneficial results both as a stimulant and as a preventive against the attacks of insects. E. Hobday.

Spent Tan a Good Manure for Potatoes.—It is asked (see p. 574) to what advantageous use can tan be put in a garden? As fresh tan is well known to be a material for supplying bottom-heat, it is therefore best fitted for that purpose. Nevertheless, even after it is spent, it makes one of the best composts which I have ever tried in which to grow Potatoes, whether early or late varieties. It only requires being well mixed with a few bushels of soot, according to the quantity required for the ground about to be planted. This compost should be spread in the drills, and when the sets are placed on it, some more compost should be scattered over the sets so as to cover them before earth is applied. At lifting time the Potatoes grown in this compost will be found to be clear in the skins and free from grubs of any kind. I once tried mixing coal and wood ashes with the spent tan for compost for Potatoes, but the skins of the tubers when taken up were very scabbed and different from those planted in soot.—William Tillery, *Welbeck*.

White-fleshed Potatoes.—The partiality commonly manifested for white-fleshed Potatoes is not entirely based on a correct knowledge of the merits of the various kinds with which we are familiar, as it is notorious that both the Ashleaf and the Lapstone Kidneys possess the best flavour, yet neither of these are strictly white-fleshed kinds. Dawes' Matchless and Waterloo Kidneys, on the other hand, are both white-fleshed kinds, but though good table sorts, they are inferior to those just named. In the same way nearly all the American sorts of Potatoes have a white flesh, but they are deficient in flavour. Varieties that, like the Lapstone, have a good tinge of yellow in the flesh are invariably the best flavoured and the most enjoyable for table use. I rank the Rector of Woodstock amongst the best of table Potatoes, having a medium size, and a flesh that is soft and mealy, and excellent in flavour; it furnishes the best table qualities of the Regent and Lapstone combined. Having been recently asked to recommend a pure white-fleshed Kidney for early culture, I have named Fenn's Early White Kidney, and to this I might have added President, an older kind, but a capital variety. Early Market has a very yellow flesh, but it boils as mealy as a Regent, and when well done, looks like crystallized sugar, and one of its great recommendations is its fine flavour. I find amongst English kinds that yellow flesh predominates, whilst amongst American sorts the Vermont Beauty is almost the only yellow-fleshed variety.—A. D.

A European Herbarium.—The Herbarium of the late Baron Oscar de Dieudonné has been presented to the Botanical Gardens of Brussels. It contains 10,537 species, represented by (it is estimated) about 45,000 specimens, and is one of the most complete collections of the plants of Europe ever brought together.—"Journal of Botany."

A SINGULAR ORCHID.

(BOLBOPHYLLUM LEMISCUM).

Orchids as a class are well known to be as singular in their structure and habit of growth as they are beautiful and variable in their colour and fragrance, and the plant we now illustrate deserves notice as one of the smallest, most curious,

Bolbophyllum lemiscum.

and least conspicuous of all the known species of the tribe. It is a native of Burmah, where it was discovered by the Rev. C. H. Parish growing on the roof of a bungalow in the vicinity of his missionary district. In general structure it differs but slightly from other Bolbophyls, with the important exception that each sepal bears on its outer surface a slender

Bolbophyllum lemiscum.—1. Flower, showing its club-shaped appendages. 4. Section of one of these appendages. 2. Flower, with sepals removed. 3. Column. 5. Pollen masses. 6. Section of leaf. [All enlarged.]

club-shaped process of complicated structure; but of what service these three appendages can be to the flower it is difficult to conceive, although they at once suggest the curious elongated feathers found in the short and ordinary shaped wings of some humming birds. There are, however, many structural parts in plants inexplicable by the light of our present knowledge, and of these this may serve as an example. B.

PLATE LIII.

THE BEURRE DURONDEAU PEAR.

Drawn by H. HYDE.

This, when well grown, is not only one of the largest, but one of the most delicious Pears, and also one of the most beautiful. It succeeds remarkably well on the Quince, and like most sorts it is improved in size, flavour, and colour if double grafted. The accompanying coloured plate gives so good a representation of the fruit that further description is unnecessary. In my private notes respecting good fruits, I class the Beurré Durondeau as a Pear possessing in every way the highest excellence. Its origin was unknown until that able pomologist, M. Pinaert, gave publicity to it in the "Fruitboomkweek en Fruitkund." It was supposed to have originated in Limbourg, but M. Pinaert has shown that it was first brought into notice at a village called Tongre-Notre-Dame, near Ath, Hainault; a tree of it existing there was supposed to be a seedling, but on examination M. Pinaert found it to have been grafted. It grew upon a property belonging to M. Durondeau, hence its name, its synonym being De Tongre. The original tree has, therefore, still to be discovered. The fruit, which has a warm, attractive colour, ripens about the middle of October, and keeps in good condition for at least three weeks. The specimen from which our coloured plate was prepared was furnished by Mr. Dancer, of Chiswick

Merriott, Somerset. J. Scott.

PACKING APPLES.

The Wisconsin Horticultural Society gives in its report the following advice on packing Apples:—Under the term packing we include the whole operation of storing and keeping after picking until finally disposed of. We recommend, as the best article to pack in, a well-made, clean, new barrel, holding 2¼ bushels, and perfectly seasoned and dry when the fruit is put in it. Take the barrel under the tree or near it, and, taking out the head, fill it a little more than level full, and then cover with short boards so as to exclude sunshine and rain; raise it on two or three sticks, or some means of keeping the bottom of the barrel off the ground, and leave it for a week or two to sweat and dry out, when the head must be pressed down to its place, and the hoops driven on tight and nailed on both ends. If the barrel be not level full when headed up it must be made so, as this is most essential to prevent the handling of the barrel from bruising the Apples. Failure in this one thing of pressing the contents of the barrel so that there shall be no loose Apples, and no working in any manner of the whole or any part of them, will involve serious danger of loss of all the labour previously bestowed. Right picking and right packages are useless, if afterwards the fruit be bruised in consequence of loose packing. We prefer to put the fruit immediately into the barrel in the orchard, and head up the barrel before it is moved, to the method so often recommended of picking and carrying to some out-house or chamber to sweat before packing, as it saves much labour, involves less risk of bruising, and requires less time. When the barrels are headed up they may be laid on the side on sticks and left in the orchard if the weather be fair, or removed to some out-house, barn, or any place where they will be dry and cool. It is a good plan to lay down some poles and rails near the cellar where they are to be kept during the winter, and place the barrels on them and cover them temporarily with boards. The point to be aimed at is to keep them as cool and dry as possible, and out of the cellar till winter or very freezing weather, as it is a well-established fact that an Apple will bear more cold and freezing without affecting its quality than any other fruit or vegetable, especially if kept in the dark and all air is excluded. Another reason for choosing tight packages is that light and air in conjunction with warmth rapidly change the structure or internal condition of the fruit and induce decay. The same agencies which operated in maturing and perfecting it will, after it is matured, ripen and afterwards destroy it. It is essential to success in keeping fruit by any method to bear this fact in mind and to be governed by it. The writer has known Apples, packed as above directed and put in a dark cellar, to be frozen to the core, and remain so for weeks, and on being opened in May, show no signs of injury in look or taste. There is no question but that it will always pay to pack Apples as herein directed, even if they are to be sold immediately; and there were never so many Apples on the market, but there would be remunerative prices paid for such by parties knowing how they were picked and packed. In commencing to fill the barrel with the Apples, some recommend placing the layer all with the stems end down,

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PEAR BEURRÉ D'URONDEAU

which gives a fine appearance when opened, and helps to sell it; of course there is no harm in doing so, provided you do not select larger and better specimens for that layer, as looks are to be regarded as desirable just as long as they do not deceive. We advise in all cases instead of putting Apples in a cellar to keep for spring and summer use, to have one especially devoted to that use, or to partition off a room in it which can be kept cold, even below the freezing point, and at the same time be dry. We repeat that there is more danger from warmth than from cold, from light than darkness, from handling than from lying still. Lastly, mark each barrel distinctly with the variety and grade on the end which should be opened.

Speed's Mildew Destroyer.—Some time back Mr. Speed sent me a bottle of this mixture and asked me to try it on my Vines, which are happily free from mildew. Feeling curious, however, to give it a fair trial, I kept one of the old pot Vines that fruited last year, tied it round four stakes, and placed it in the front of a Pine stove, in which it looked well and grew rapidly; I then introduced mildew taken from a Rose tree, and in ten days the Vine leaves were covered with it. I then put 3 quarts of water to 1 quart of the mixture, gave the Vine one good syringing, and the result is the mildew has vanished, and the young tender leaves are not in the least hurt or discoloured, no stain being left upon them. I have many times used mildew-killing mixtures, but this is the most satisfactory that ever came under my notice.—R. Gilbert, *Burghley.*

Newly-bought Orchard-house Trees.—I should be glad if you could help me as to the management of our orchard-house. We have just had one built, and have got twenty young trees in pots, consisting of Peaches and Nectarines from the nursery. They are good trees, ready for fruiting. Shall I put them in the house at once, or plunge them in some material out-of-doors in order to protect their roots? When should I re-pot them or top-dress them, and if I am to leave them out-of-doors, when should I place them under cover? We intend to grow the trees in pots.—J. W. [The trees in question should be put into the house at once and not kept out-of-doors; if in the ordinary nursery pots they should be shifted into No. 6-sized pots, and top-dressed. You will find good instructions on these and on other points connected with orchard-house management in Rivers' "Orchard House."]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Burchardt's Prince as an Outdoor Vine.—Eyes of this Vine were sent to me from Antibes four years ago without name, but with the highest testimonial as to the excellence of the fruit as grown there, and with a request that I would try it out-of-doors in Hants. This I have done, and it has this season ripened its fruit equally well as the Royal Muscadine, and being as free a bearer, it may safely be added to our (as yet) but meagre list of good outdoor Vines.—W. W. H.

Langham Crab Apple.—I can fully endorse the remarks made (see p. 559) upon this Apple, which, if better known, would be more appreciated by fruit-growers. It is an excellent keeper, and a good culinary Apple, which hangs well on the tree; no ordinary wind will shake it off, and it seldom misses producing a good crop. I have never met with it except in the locality mentioned.—R. B. Fuller, *Fitzroy Park, Highgate.*

Fine Winter Nelis Pears.—Specimens of this Pear from trees this year, measured, according to the "Country Gentleman," fully 3 in. in diameter, and many besides were nearly as large. The flavour was richer and better than in the case of smaller ones. This size appears to have been owing to good cultivation and a sparse crop. Can we not reach a similar result every year by thorough thinning and good culture?

Analysis of the Fruit of Diospyros Kaki.—My friend Dr. Voelcker, whom the Royal Horticultural Society is fortunate to have as a member of its Scientific Committee, has been kind enough to have this fruit analysed in his laboratory. The quantity of tannic acid which it is shown to contain is quite sufficient to account for the wry faces of those who first tasted it. Let us hope, as is probably the case, that other varieties contain more sugar and less of the astringent principle composition of the fruit of the Diospyros Kaki.

Water	84·64
Albuminous Compounds containing Nitrogen	0·62
Crude Woody Fibre	2·11
Tannic Acid	2·32
Sugar Pectin, &c.	9·89
Mineral matter (Ash)...	0·42
	100·00

—G. F. Wilson, *Heatherbank, Weybridge Heath.*

Apples in New England.—The "Vermont Farmer" speaks thus of the plenteousness of the Apple crop in that region:—"Apples are scarcely worth picking for the manufacture of cider except to be used for vinegar. The cider will not sell for enough to pay for the labour and cost; but there is a way in which cultivators can realise a good result from cider Apples, and that is, by feeding their stock with them." The "Springfield Republican" says:—"Apples are a drug in Western Massachusetts. In Franklin county, cider Apples sell for 5d. a bushel; the best eating varieties at 3s. 1½d. a barrel, at Athol, and for 6s. 3d. at wholesale in Springfield."

Darwin on Cross-fertilization of Plants.—A copy of Mr. Darwin's new work on cross-fertilization has reached us, and, like all previous works by the same author, we find it full of interesting facts, many of which are of great value to horticulturists. The object of the work is to show the benefits of cross-fertilization, and especially is this shown to be the case when either the pollen or seed-bearing parent is brought from a distance or from a fresh stock, for, as Mr. Darwin himself puts it, "the advantages of cross-fertilization do not follow from some mysterious virtue in the mere union of two distinct individuals, but from such individuals having been subjected during previous generations to different conditions, or to their having varied in a manner commonly called spontaneous, so that in either case their sexual elements have been in some degree differentiated; and secondly, that the injury from self-fertilization follows from the want of such differentiation in the sexual elements." Self-fertilization, however, has one advantage, for by practising it for six or seven generations under similar conditions of growth, the seedlings obtained are, to all appearance, perfectly alike, or, as gardeners put it, they "come true," a condition often highly desirable. We thus see that cross-fertilization by insect agency is likely to originate new forms, while self-fertilizing plants, on the other hand, are more likely to possess fixed characters or sameness of habit and colour. We shall refer to this work again, but in the meantime we strongly recommend it to the notice of all who are interested in the higher branches of plant culture and improvement.—B.

Ground Flowers and Fern Leaves*.—This is a small and elegant volume of poems, some of them concerning Ferns, flowers, &c., and evidently written by one fully conversant with these. There are also a variety of poems on subjects of general interest, some of them original and striking in character, as, for example, the lines on "Re-perusing In Memoriam." It is not our province to criticize poetry, but we think the author much stronger in the poems on subjects of general human interest than on those devoted to natural history. This, however, is probably common to poets.

Garden Account Book.—Mr. J. Sinclair sends us from Ripley Castle gardens, Leeds, a "Garden Day-book," which he has found of very great use. The book consists of 365 pages, and is so arranged that the value of the vegetables, fruits, and flowers supplied each day from the garden can be entered. Lists of vegetables and fruit are printed on every page, and only the value of each day's supply requires to be added to the money column. It is a convenient book, but somewhat too small in form for the purpose of writing in figures.

THE "GARDENERS' CHRONICLE" ON THE IRIS ARTICLE.

The "Gardeners' Chronicle" of last week, in a foot-note to a letter sent to it on our part, states that Mr. Hemsley "frankly apologised to us" [for writing the Iris article]. This being so, we may as well print a few words from Mr. Hemsley on the same point, written under date Dec. 10:—"*I do not think any one, on comparing the two articles, would regard mine as a condensed form of Baker's monograph. The only thing they possess in common is the arrangement.*" It is scarcely necessary to add, that up to the present day no botanist has felt aggrieved at any one avowedly following his system or plan of classification. There is no copyright in a system of classification. Mr. Hemsley adds:—"Respecting the statement that Mr. Baker was unaware that his manuscript would be put under contribution to the extent it was, I have to say that it was only a list of names Mr. Baker allowed me to use, and I daresay a comparison would show that the sequence of the species, &c., is not the same." We apologize to our readers for bringing this unseemly matter into pages usually free from such writings, but the subject was forced upon us by the publication in the "Chronicle" of an offensive paragraph containing a statement which was calculated to lead to the belief that a wrong had been done.

Small Town Conservatory.—I have read with pleasure "P.'s" success (see p. 575), with a small house managed by himself. would not mineral oil lamps heat water on a small scale if assisted by refilling with boiling water the last thing on cold nights. I have a half-span conservatory, constructed on Cranston's principle, 15 ft. by 12 ft.; it is 10 ft. from the ground, with an open archway beneath part of it; the floor is concrete, on boards, and underdrawn. I have

* "Ground Flowers and Fern Leaves:" by A. S. K. Manchester: Ratcliffe & Co., 8, York Street.

a gas apparatus below to heat water in 4½ in. pipes, which pass round three sides of the house, retiring by the heating apparatus. I suffer from the two extremes, viz., I cannot keep out the frost in winter, and everything is baked up in summer. A correspondent in one of your early numbers stated that he did not find double glazing a success, as it reduced rather than increased the temperature. I want to equalise it, perhaps some of your experienced readers will tell me if 2½-in. or 3-in. pipes would not give more heat than I now obtain from 4½ in.-pipes with the same number of burners. It occurs to me that the two extremes might both be modified by double glazing, or by a movable sash to fit the inside of the lower section, leaving a space of from 2 in. to 4 in. between the glass next the stage.—S.

Cultivated Pernettyas.—What are the names of the two enclosed Pernettyas, and what other kinds of Pernettya are there in cultivation?—A. B. [On sending the specimens furnished by our correspondent to Mr. I. Anderson-Henry, Hay Lodge, Edinburgh, an authority on such matters, he writes to us as follows:—The name of the Pernettya of which you send sprigs is P. mucronata. The one has no doubt larger leaves and fruit than the other, but they are one and the same species—probably seedlings. The following are the different species of that tribe cultivated hereabouts:—Pernettya Pentlandi, figured in the Bot. Mag. last January, and introduced by me from the Andes of the Equator; P. pilosa, a lovely species with large black berries; P. candida, with whitish berries equally large—all grand rock plants; P. angustifolia; P. microphylla; P. speciosa; P. floribunda; and P. mucronata. All the above, I am informed, are cultivated in the Lawson Company's nurseries here.]

Pruning and Training the Marechal Niel Rose.—What course of pruning and training would you recommend for a Maréchal Niel grown under the following circumstances? The Rose was planted only in November last, and tied loosely against a south wall. It is at present just as it came from the nurseries, and may be described as a straight shoot on the Manetti about 6 ft. or 7 ft. long; there are one or two laterals, but they are short and weak. My object, of course, is to cover the wall quickly with the sacrifice of as little bloom as possible.—Thos. Pringle, *Heckfield Villa, Clarence Road, Wood Green.*—[If Mr. Pringle were to tie down the straight shoot of his plant of Maréchal Niel, I think he will find that he will get strong laterals from the eyes near the collar of the tree, and in all probability some shoots from the collar itself. The Manetti is not a good stock for either Tea or Noisette Roses, the Briar being far preferable.—R. N. G. Baker, *Heavitree.*]

OUR CHRISTMAS ROSE.

"Roses at Christmas.—A correspondent at Llandudno sends us a few Roses and Hawthorn sprays gathered in December bloom, at that favourite Welsh resort, where indeed Roses are often known to flourish in the open air all the year round."—*Daily Telegraph.*

Happy Llandudno! where, whilst Winter's pall
Droops o'er the town, and dims Mirth's struggling ember,
The Queen of June flaunts her bright coronal
In drear December!

Roses in Fogdom! Flora from her bower
Of deathless summer well might gaze with pity
To see, midst dark and damp, her favourite flower
In our dull city.

And yet our Rosa Mundi, fragrant, fair,
With careful culture may be brought to blooming
In Babylon's heart, whilst Winter, Want, and Care
Are round us glooming.

Think of it, Gentles, while you gaily twine
Your Christmas wreaths of Mistletoe and Holly;
To miss the flower of flowers, of birth divine,
Were worse than folly.

Think of it, Ladies of the Liberal hand,
Ere round your Yuletide log you cheerly close,
Let Charity in City wastes expand
Her Christmas Rose!

—"Punch."

Yucca filifera, which was figured in The Garden (see p. 554), is a very distinct species of a section, the flowers of which are little known. Though the same plant may have been sold under the names albo-spica and canaliculata, these names properly belong to different plants, and are not merely synonyms of Y. filifera. Y. canaliculata is figured in the "Botanical Magazine," t. 5201, and described in The Garden, vol. viii., p. 134, and Y. albo-spica belongs to the angustifolia group. A large specimen of Y. filifera may be seen in the succulent house at Kew.—W. B. Hemsley.

DECIDUOUS TREES AND SHRUBS FOR LONDON.

I read in the "Times" some months ago that deciduous trees and shrubs grow well in London. If it be not troubling you too much, could you furnish me with a list of kinds suitable for the purpose?—L. B. [The following trees and shrubs that lose their leaves in autumn (that is to say, are deciduous) and thereby escape the winter's soot, are among those that may be depended upon to succeed in London, viz.:

Acer striatum
platanoides
Lobeli
saccharinum
Pseudo-Platanus
opulifolium
eriocarpum
rubrum
Æsculus Hippocastanum
H. ohioensis
H. rubicunda
Ailantus glandulosa
Alnus laciniata
subcordata
Amelanchier vulgaris
v. Botryapium
Amygdalus communis
amara
dulcis
macrocarpa
Berberis vulgaris
Betula alba
pendula
Carpinus Betulus
Castanea vesca
Catalpa syringæfolia
Celtis occidentalis
Cerasus sylvestris fl.-pl.
vulgaris fl.pl.
v. semperflorens
borealis
Mahaleb
Padus
Cercis Siliquastrum
Chimonanthus fragrans
Chionanthus virginica
Cornus sanguinea
mas
Corylus purpurea
Colurna
Cotoneaster frigida
f. affinis
bacillaris
Cratægus coccinea
glandulosa
punctata rubra
pyrifolia
macracantha
Crus-galli
C. splendens
C. salicifolia
nigra
purpurea
Layi
Douglasi
flava
apiifolia
Azarolus
Aronia
tanacetifolia
Lecana
Oxyacantha
O. stricta
rosea
punicea
Cydonia vulgaris pyriformis
japonica
Cytisus Laburnum
L. alpinus
purpurascens
odoratus
Daphne Mezereum
Deutzia scabra
gracilis
crenata fl.-pl.
Euonymus europæus
latifolius
Exochorda grandiflora
Fagus sylvatica
s. purpurea
s. asplenifolia
s. pendula
Fraxinus excelsior
e. pendula
e. aurea
parvifolia
lentiscifolia
americana
juglandifolia
Genista hispanica
ætnensis
virgata
tinctoria
Gleditschia triacanthos
inermis
sinensis
Bujoti pendula
Gymnocladus canadensis
Halesia tetraptera
Hamamelis virginica
Hibiscus syriacus in var.
Hippophäe Rhamnoides
mas
Hydrangea quercifolia
paniculata grandiflora
Hortensia
japonica
Hypericum elatum
oblongifolium
Juglans nigra
regia
Kölreuteria paniculata
Liquidambar styraciflua
Liriodendron tulipifera
Magnolia Thompeniana
acuminata
cordata
auriculata
conspicua
Mespilus germanica
Smithi
Morus nigra
alba
Negundo fraxinifolium
Nyssa villosa
Ornus europæa
Ostrya vulgaris
Pæonia Moutan in var.
Paulownia imperialis
Pavia rubra
macrocarpa
macrostachya
Persica vulgaris in var.
Philadelphus coronarius
Gordonianus
speciosus
laxus
Planera Richardi
Platanus orientalis
acerifolia
occidentalis
Populus alba
tremula
pendula
nigra
canadensis
monilifera
fastigiata
angulata
balsamifera
Prunus spinosa fl.-pl.
myrobalana
Ptelia trifoliata
Pterocarya caucasica
Pyrus communis
c. salvifolia
c. salicifolia
Pyrus bollwylleriana
coronaria
spectabilis
floribunda
Toringo
Aria
vestita
torminalis
Sorbus
pinnatifida
aucuparia
pendula
americana
spuria
Quercus pedunculata
concordia
fastigiata
Cerris
alba
Prinus
rubra
coccinea
palustris
Phellos
Rhus Cotinus
typhina
glabra
Robinia Pseud-Acacia
umbraculifera
macrophylla
fastigiata
Decaisneana
viscosa
hispida
Salix purpurea
americana pendula
triandra
pentandra
babylonica
Russelliana
alba
vitellina
caprea
pendula
Sambucus nigra
laciniata
racemosa
Shepherdia argentea
Sophora japonica
pendula
Spiræa callosa
prunifolia fl.-pl.
Douglasi
ariæfolia
Lindleyana
Syringa vulgaris in var.
Tilia europæa
platyphylla
rubra
laciniata
alba
americana
Ulmus campestris
c. stricta
c. viminalis
c. v. stricta
montana
m. major
m. fastigiata
m. pendula
americana
Viburnum Lantana
plicatum
Opulus sterilis
Virgilia lutea
Weigela rosea
amabilis
Van Houttei

Plantains on Lawns.—How can I best get rid of these? I have tried acids, also Barber's Lawn Sand, both of which have only disfigured the lawn for the time, as the Plantains have re-appeared.—F. C. [Root them out in spring with an oyster knife with as little disturbance to the Grass as possible.]

Malaga Raisins.—There are three distinct sorts of raisins. First, the Muscatel, which are the finest, and are always packed in boxes of 25 lbs., and half and quarter boxes, containing respectively the half and quarter of that quantity. Second, the Bloom raisins; these are prepared in a manner in every way similar to the Muscatel, but from a different Grape—a very long Grape, called in the country Uva Longa. These are also generally packed in boxes, but sometimes in casks. Those in boxes are called bunch raisins; the others are generally of an inferior quality, and separate from the stalks. Third, the Lexia raisins, which are packed in casks or Grass mats called "frails."

No. 267.] SATURDAY, DECEMBER 30, 1876. [Vol. X.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

PYRAMIDAL CULTURE OF DWARF PLANTS.

MANY dwarf plants would gain in importance by being more elevated than they naturally are. Instead of the universal flat surface, why not take for our models occasionally the cone or pyramid? In this age of change, when something new or different is the cry of all classes—in the garden and out of it—this diversity and elevation of root-line in our artificial modes of growing plants would prove most welcome. Neither is there the slightest difficulty in the matter. We have, for instance, pots of different sizes; each used singly provides a level surface, which may be occupied with one tall plant or a cluster of small ones rising only a few inches above the earth. In the former case the endless variety of stature among plants gives sufficient diversity of sky-line; they graduate in height, in fact, from, say 50 ft. to 1 ft., and this diversity of stature is one of the main sources of pleasure. But single pots or pans furnished with dwarf plants become so many patches all of one height; however beautiful they may be, the uniformity of level mars their interest and indirectly lowers their beauty. An easy remedy is within reach. Instead of one pot for the growth of dwarf plants, choose a series of different sizes and place them one within the other. They fit too closely for any useful purpose; nevertheless, the form—almost a perfect cone, apparently composed of a solid mass of pot rims—is excellent. Pots thus arranged furnish a useful idea. To turn it to practical use, we have only to put a certain amount of drainage—say 3 in.—in the bottom pot, and place the next size, or a second remove from it inside of it, resting the second pot on the drainage of the first; this will leave a space of 2 in. or 3 in. between the first pot and the second; fill this space with rough soil or drainage to within 4 in. or so of the top of the first pot; drain the second pot as before, place a third within it, and fill up the vacant rim as with the first; drain the third pot and place it in the second, and so on until the pyramid is crowned with a 3 in. or thumb-pot. We have now virtually one pot for cultural purposes, consisting of a crown of small size and a series of rings or narrow planes, from base to summit. The whole, too, is thoroughly drained, and comparatively solid and safe, so as to be carefully moved from place to place as required as one pot. Of course it will be rendered still more stable and secure when the plants are all potted in the different planes, and the whole of the upper spaces now empty are filled with comparatively solid earth. To illustrate this mode of potting plants in such an extemporised cone, we shall take, say, a patch of Lycopodium cæsium. On the flat it is not too much to say that full half—nay, three-fourths—at least of this most charming of all the Lycopodiums is lost. The best way of potting very dwarf plants in these pots, such, for instance, as L. apodum, is to begin at the crown and work downwards; then no earth falls on the plants to soil or bruise them after they are potted, but as this Lycopod is rather long in its branchlets, which would be in the way if we began at the top, it is better to begin at the bottom. The base pot—about a 15-in. one—is so much above the ground; on this account the longest branches are chosen for the bottom plane and allowed to fall over the rim of the pot nearly to the ground. Small-rooted pieces are planted in rough, sandy peat, about 4 in. from each other, and the lower plane is finished and filled in with soil to within ½ in. of the surface. The next ring is planted in the same way with pieces that sweep down many of them past the first; then the next, and the next, and so on till a choice dwarf tuft is reserved for the crown. The whole is then watered carefully all round with a fast-running rose to rinse off all soil that may have fallen on the Lycopod during the process of potting. The result is a magnificent pyramid at once, every part of which is brought within direct reach of the eye; and the flat plant, which only presented an even, level surface, has increased in bulk and multiplied its beauty tenfold or more. It will be obvious that, in pyramidal culture the more dwarf the plants, the nearer the planes of earth must be brought to each other if we would have an unbroken line of beauty. For instance, in forming a perfect cone of L. apodum, as many pots again would be necessary as in forming one of L. cæsium. In fact, L. apodum is almost too dwarf for this mode of culture. But such Lycopods as atroviride, denticulatum, inæqualifolium, Mertensi and its variegated form stoloniferum, umbrosum, and others, make magnificent plants treated in this way. Again, such plants as Fittonias, Epiphyllums, Tradescantia zebrina, and its golden variety Pothos argyræa, and many others, are marvellously enriched and improved by this pyramidal style of growth. For a verdant pyramid no plant can equal Isolepis gracilis.

D. T. FISH.

PLANTING AND WHAT TO PLANT.

THE selection of trees suitable for various soils and situations should be carefully considered. On light, poor, hilly lands, and moderately exposed, the Larch is the most profitable tree to plant for a main crop; when the altitude or exposure is too great for the Larch, a shelter-screen should be planted with Austrian, Corsican, and Scotch Pines, planting the Austrians on the outside or exposed sites, as they are of a more bushy habit than the others, and the best Pines grown for shelter. The Scotch and Corsican Pines thrive well and make excellent timber on exposed, poor plains, where the Larch has been found to be a failure. On the other hand, the Larch generally is more vigorous and less liable to disease when grown on the declivities of hills with a south-west, west, or north-west aspect, than in other situations, the reason being that the sun's rays do not reach these aspects so early in the day, and thus the trees do not suffer from late spring frosts so much as when planted on east or south-east aspects. If shelter for game be required, or ornamental effect in the landscape scenery be desired, masses, clumps, or groups (according to the size of the plantation) of the Silver and Spruce Firs should be planted in judiciously-chosen positions to give the most pleasing and natural effects without stiffness and formality. The Douglas and Menzies Spruce, Nordman's Silver Fir, and the Wellingtonia, which are now more plentiful than they have been, and may be bought at moderate prices, might also be introduced in smaller groups in the lower sites, where the soil is tolerably deep and the situation somewhat sheltered; they are all hardy, fast-growing, and beautiful Conifers, being very effective when planted in groups amongst deciduous trees.

Where hardwoods are planted to form the permanent crop on thin poor soils, the Beech, Sycamore, and Sweet Chestnut are the best sorts to select. When the soil is of a loamy nature, and resting on clay, the Oak and Ash should be planted; the latter, particularly, will prove a profitable tree to plant extensively where the land is suitable to its healthy growth, as the supply of Copse or Maiden Ash timber is at the present time not equal to the demand, and likely to be still more scarce in the market. I would therefore say plant Ash in preference to any other hardwood when forming new plantations, or filling up copses, wherever it is found to thrive. In copses on poor, hilly ground, Sweet Chestnut and Hazel should be planted where blanks occur; in wet-bottom land Alder, Willow, and Poplar, are the most suitable sorts to plant; on chalky lands the Hazel alone is sure to succeed best: it is a most accommodating plant, will thrive in almost every kind of soil, and is very profitable as underwood, always commanding a good price and ready sale where there is a demand for Crate and Hurdle wood.

Whenever the weather is favourable for planting operations, push forward without delay any forest tree planting that may be in progress, or the formation of any new plantations which may be contemplated during the present season; also drainage by means of open ditches and trenches, where naturally wet, or where there is not sufficient natural fall for surface-water; likewise the enclosure of the ground by the erection of substantial fences to protect the young trees from damage by the inroads of cattle; and the cutting, clearing, and burning of Furze, Brambles, Heath, or any other strong-growing material of that kind that is likely to impede the work of planting or interfere with the healthy growth of the plants. These are all necessary preliminaries to forest tree planting that should have been finished ere this, in order that the work of digging the holes and planting the trees may progress speedily during seasonable weather, and when the ground is in a good condition to put in the plants. As soon as the latter are received from the nurseries, they should be taken without delay to the ground where the planters are at work, and heeled in thinly in a trench, their roots being securely covered

over to prevent them from getting dry, and to protect them from frost. When the plants are heeled in they should also be protected from hares and rabbits either by fixing temporary wire netting round them, or laying Fir boughs or Bracken over them. G. B.
Longleat.

American Fruits and other Garden Produce—Mr. Edward Sprague Rand, jun., writing from Boston, Mass., kindly sends us the following interesting particulars concerning the Apple and other fruit crops in America:—Baldwin Apples are a drug in the market; I can, he states, buy the best for about 6s. per barrel delivered, and on my farm we are feeding cattle on them or making them into cider for vinegar. The Newtown Pippin is not grown at all in the New England States; it is a New York Apple, and is cultivated wholly for export to England. The principal New England Apples (by which I mean those most commonly grown, and which we find for sale at the street corners), are, in their respective seasons, Williams' Red, Astrachan, Porter, Gravenstein, Hubbardston Nonsuch, Rhode Island Greening, Danvers' Winter Sweet, Baldwin, Blue Gillyflower, and Roxbury Russet. Fruit growing is carried on here on an immense scale. Out-door Grapes from the West have sold all the summer for 2½d. per lb., now they are double that price. Potatoes are very high; Nova Scotia and Early Rose, 14s. per barrel; in this vicinity, between excessive drought and the Colorado Potato beetle, the crop has been a failure. The vicinity of Boston is the finest Pear-growing region in this country. The Californian Pears, with which the market is abundantly supplied, are very beautiful in appearance, but not highly flavoured. Californian (Flame-coloured Tokay) and Malaga Grapes are abundant on street-stands at from 10d. to 1s. 5d. per lb.; Lemons, 7½d. per dozen; Mediterranean Oranges, 10d. per dozen, but the large Florida Oranges cost 2s. 6d. per dozen. The Chestnut (native and Spanish) and Pea-nut roasters are seen everywhere; Bananas are scarce just now, but from April to September the market is abundantly supplied with both the red and yellow in many varieties, the retail price varying from 1s. to 3s. per dozen. Pines were very plentiful this last summer at £1 per 100. In addition to all these we have many kinds of berries, Peaches by the cartload, Plums, Apricots, and Nectarines.

Poinsettia pulcherrima Producing Lateral Bracts.—A rather curious circumstance has come under my notice with respect to the flowering of this plant—a record of which may prove interesting to your readers. The plant in question was turned out of an 8-in. pot last spring, when the young shoots were about 3 in. long, and planted in a narrow pit at one end of a stove. The soil in which it was placed was composed of good turfy loam, leaf-mould, and old dry cow manure, three parts of the former to two of each of the latter, to which was added a little sharp sand and charcoal. The plant made very rapid progress, and when some 12 in. or 14 in. high, the points were nipped off each of the four shoots which it had made. Two shoots were allowed to break from each of these, which shoots were not again stopped. As they advanced in growth they were tied to the trellis against the back wall. By the autumn they had nearly reached the glass, and were as thick as an ordinary walking stick. The bracts produced by them were particularly fine, and by the last week in November had been all cut for decorative purposes. And now comes the singular part of the affair. The shoots were allowed to remain tied to the trellis, and in about eight or ten days after the bracts had been cut, "lateral bracts"—if I may so call them—began to show themselves at the axils of the uppermost leaves. Some of the shoots showed four, and others five, of these lateral bracts. They continued to increase in size, and some of them are now 6 in. or 7 in. in diameter, and commencing to colour. In the course of another fortnight I expect they will have increased to a much larger size, and be fully coloured, when they will be very welcome for cutting for vases, &c.; even as it is, they have a very striking and ornamental appearance. This may be nothing new to some of your readers, but it is my first experience of the Poinsettia pushing "lateral bracts."—E. R. Q. P.

The Charleville Forest Grapes—As a recognition of the great merit of the Grapes (Gros Guillaume) exhibited by Mr. Roberts, gardener to the Countess of Charleville, at the Royal Horticultural (of Ireland) Society's Show, held last month at the Dublin Exhibition Palace, the Council have awarded him the Society's medal. The three bunches, perfectly symmetrical and also fine in berry, weighed collectively 3 stone 6 lb., and their market value was £8 16s.

New Zealand Flax hardy in Lancashire.—Allow me to inform "W. W. H." that the New Zealand Flax is hardy, even in North Lancashire. While writing this I have my eye on a group of two or three dozen plants, all of which are as green as Leeks. I have never seen this Flax in bloom in this district, and it gets browned in very severe winters. It seems to delight in sea air, and is eminently a water-side plant.—Thos. Williams, *Ormskirk.*

NOTES OF THE WEEK.

The White Tree Datura at Christmas.—We noticed a specimen of this with many fresh trumpets on it in Mr. E. W. Cooke's conservatory at Glen Andred a few days ago. No doubt it requires special treatment to secure this end, but the result is worth some trouble.

Finely-flowered Dendrobium fimbriatum.—A very fine specimen of this well-known Dendrobe growing in one of the plant-houses at Wimbledon House is now furnished with twenty spikes of its beautiful golden-fringed flowers. Each spike bears from ten to fifteen blooms, which are well formed and of unusually large size. The plant has been allowed abundance of heat and moisture until it showed bloom, when it was at once removed to a drier and cooler atmosphere, in order that the flowers might open more naturally and continue in good condition for a longer period than they would do if allowed to remain in moist heat.—S.

Mildness of the Weather in Anglesea.—I see occasional notices in The Garden showing the mildness of the climate in various parts. I resided near Conway for four years, and each Christmas and New Year's Day I gathered the Gloire de Dijon Rose in blossom in the open air, besides other varieties. Yesterday morning (December 26) I gathered in my neighbourhood in Anglesea Hydrangeas, Anemones, Cydonia japonica, Mignonette, Fuchsias, Ragged Robin, and other wild and garden flowers from the open air in full bloom; I also gathered at the same time blooms of the following Roses, viz.:—Saffrano, Madame George Paul, Victor Verdier, and one or two others. My plants of Gloire de Dijon are quite young, but they are in full leaf, and have good-sized buds. Most of the Fuchsias, such as Wave of Life, Avalanche, and Sir Colin Campbell, grew in the open ground, without any protection, all last winter, and are now in full leaf, some with seed-pods. Self-sown Nasturtiums are coming up in all directions. The Anemones are quite gay with blossom, and have been so for several weeks past; Primroses were out a week ago. Self-sown Broad Beans are nearly in blossom, and they were in the same condition about this time last year.—W. L. B.

Hedge of Euphorbia jacquiniæflora.—Most people are acquainted with this highly useful, winter-flowering stove plant, but few probably have ever seen it in the perfection in which it may now be found in the gardens at Wimbledon House, where there is quite a hedge of it along the back of a lean-to Pine stove, 40 ft. in length. The soil in which the plants are growing is ordinary potting-mould, but their roots have run into the leaves in which the Pines are plunged, a condition which has doubtless increased their vigour. The shoots, many of which are 9 ft. in length, are supported at the base by string run horizontally alongside the row of plants; otherwise, no sticks or ties are used. Thus circumstanced, they produce multitudes of long racemes of flowers, which, for brilliancy and effectiveness, are perhaps unequalled. All who have to furnish cut blooms at Christmas in quantity cannot do better than grow this Euphorbia in the manner just described. Many complain that it is difficult to manage, but here it appears to thrive as luxuriantly as any plant could possibly do; many of the shoots made this year are as thick as a Cedar pencil, and have grown 8 ft. or 9 ft. in length, at least 2 ft. of their tops being thickly studded with blossom. Some of the flowering shoots of these Euphorbias, from 9 in. to 15 in. in length, were shown at a recent meeting of the Royal Horticultural Society at South Kensington, where they were much admired.—S.

Bonapartea juncea in Bloom.—There is at present in the greenhouse at Raith, Kirkcaldy, a large specimen of this interesting old-fashioned Peruvian plant in full flower. This seems to me worthy of record, seeing that I have been familiar with the species, and have met with it frequently in plant collections all over the country for more than a quarter of a century and cannot recall to my memory any other instance of its condescending to produce blossoms. The plant in question has been in the gardens at Raith for a long period—some say thirty years. It is growing in a 14-in. pot, into which it was shifted many years ago, the soil used being a mixture of peat and loam. The stem or crown is about 2 ft. in circumference, and from this the cylindrical, Rush-like leaves, averaging 20 in. in length, spring in such numbers that it is quite hidden. The flower-stem rises to a height of 8½ ft., and of that 6½ ft. are furnished with tubular-shaped flowers arranged in pairs. The flowers themselves are divided at the mouth into segments, which are slightly reflexed; they are greenish-white, thick and waxy in texture, resembling in general appearance those of a single Hyacinth, but quite double the length. I was informed that the plant had only received ordinary greenhouse treatment, no special means having been employed to induce it to bloom.—Argus. [Bonapartea juncea flowered in the gardens of the Royal Horticultural Society at Chiswick in 1845.]

THE INDOOR GARDEN.

A GRACEFUL CYPERUS.

(KYLLINGIA MONOCEPHALA).

This plant is not generally known in gardens, although a few examples of it may have been seen in the Palm stove at Kew for ten or twelve years, and it has elsewhere been cultivated as a graceful and distinct decorative plant. Quite lately it has been brought again into notice by Messrs. E. G. Henderson & Son, who exhibited one or two small specimens of it at a recent meeting of the Royal Horticultural Society at South Kensington, where it was much admired, and where the accompanying sketch was taken. The plant produces a tuft of drooping or arched grass-like leaves, from which spring slender, triquetrous stems, bearing cone-shaped, silky heads (as shown in the annexed engraving), from the base of which two or three slender drooping bracts are produced, and which, in their fresh leaf-like greenness, contrast well with the silvery-tinted, down-like inflorescence. The plant succeeds well in a warm greenhouse temperature, and grown in small, say 48-sized pots, forms pretty little specimens 1 ft. in height, admirably adapted for decorative purposes. Almost any light and porous compost seems suitable to its growth if placed on a well-drained bottom, and, like nearly all other Cyperads, a copious supply of water is requisite while the plant is growing. There are said to be upwards of fifty species of Kyllingia, the greater portion of which are natives of Brazil and South Africa, and a few belong to Australia.

B.

Kyllingia monocephala.

Genetyllis fuchsioides.—This, though not one of the most easily cultivated, is one of the best of our hard-wooded greenhouse plants for freedom and duration of bloom. It is an Australian species, with its branches red and its leaves dark green, while the profusion of red, bell-shaped flowers which it produces when well grown renders it highly deserving of any extra care requisite to bring it to such a state. It may be had in bloom from September until Christmas, and even later. A cool, airy house and good sandy peat and turfy loam suit this plant best. Messrs. Lee, of Hammersmith, grow many fine specimens of it, and during the dull months of winter they are a mass of bloom, and when associated with other plants of a similar character are wonderfully attractive and pretty.—S.

Honeysuckles for Forcing.—It is seldom we find these used for forcing in private establishments, yet they are amongst the easiest of all shrubs to force; they come into bloom more quickly after being placed in heat than most subjects grown for the purpose of furnishing flowers in winter; and plants for such purposes may be easily obtained by inserting strong cuttings of ripened wood, with a heel attached, in the open border, growing them on for a year or two for potting, or old plants may be cut back and divided, and planted in nursery rows for a year, or be put into pots at once. They may be grown in any shape that may be desired, as the Honeysuckle is a shrub that may be easily trained. The chief point is to get the wood, from which flowers are expected, well ripened; for unless thorough maturity be secured, failure is sure to be the result.—C.

GARDENIAS AND THEIR CULTURE.

There are few plants cultivated in our stoves that are such general favourites as Gardenias, or that have so many properties calculated to render them generally useful. A considerable number are in existence in Europe that during the present century have been introduced from China, the East and West Indies, South America; also one or two from Sierra Leone, of which the singular G. Stanleyana, so very unlike in appearance to the generality of the other species, is a noteworthy example. With one or two exceptions, they are all evergreen shrubs, mostly possessing a dense, compact habit of growth. The species held in high estimation are comparatively few in number, although differing considerably in general appearance; they are deservedly prized for the exquisite fragrance of their blooms, and for the freedom with which they are produced over a considerable portion of the year, especially during the winter, when sweet-scented flowers are scarce. They are also particularly adapted for the decoration of vases and bouquets on account of their soft, milky-white colour and agreeable perfume. The still-closed or newly-expanded flower-buds of the small G. citriodora, quite distinct in appearance from the other members of the family, are largely used in the place of Orange blossom, for which it is by no means an indifferent substitute. So accommodating in their times of flowering are the species usually cultivated, that they may be had in bloom for the greater part of the year by growing a sufficient number of plants to admit of their introduction in succession through the winter into the requisite heat to bring them on into flower. To have them in bloom during the winter the plants require to be prepared, especially in the preceding season, by well maturing their growth in autumn, in order to induce a free disposition to flower. They are easily grown, and are remarkably free bloomers, but there is one point in their cultivation that demands special notice, viz., that where they are required to be grown in anything approaching a condition that will fully exemplify their flowering capabilities, they must be kept free from the attacks of insects of the worst description, such as mealy bug, with which pest they are great favourites, the natural habit of the plants particularly furthering the increase of this insect, which, if once it obtain a footing upon a plant, will give an unlimited amount of trouble unless completely eradicated. The propagation of Gardenias is very easy if cuttings from half-ripened shoots be made in March, about which time they can be had in that condition from plants that have been kept in a brisk heat through the winter for early flowering; insert these singly in small pots, drained and half-filled with a mixture of equal parts of peat and sand, filled up with fine sand covered with a propagating glass and kept moist, and if placed in a temperature of 65°, they will root in a few weeks, when the glass may be removed; at the beginning of May move them into 4-in. pots. They will grow in either peat or loam, but I prefer the former, where it can be had of a fibrous nature; if peat of a heavy, close description be only obtain-

able, it is better to grow them in turfy loam, break the fibrous parts up into small pieces, adding one-sixth of rotten manure and as much sand as will keep the whole porous; in all stages of their existence this is necessary, as they require a plentiful supply of water when growing freely. Pot them firmly, and place them where they will receive plenty of light in a temperature of 70° in the night with 10° higher in the daytime, giving air as required in the early part of the day, and shading from the sun in bright weather. Close early in the afternoons and syringe well overhead at all times; whilst they are growing freely keep the atmosphere moist, and when the plants have developed freely pinch out the points of the shoots so as to cause them to break back; they will then grow rapidly, making roots very fast; by the end of June they will have filled their pots, and should be at once moved into others 4 in. larger.

The preceding treatment will apply to all the varieties hereafter recommended to be grown, except the small G. citriodora, for which a 6-in. pot will be of sufficient size the first season. Let the soil now used be somewhat more lumpy, with a similar proportion of rotten manure and sand to that previously employed. After potting, do not give quite so much water to the roots until they have fairly got hold of the new soil; again pinch out the points of the shoots and tie them down in a horizontal position, which will induce them to break back as well as push additional growth from the points. Continue to treat them as before this last potting, closing the house in the afternoons through July and August, so as to cause the temperature to rise for a couple of hours up to 90°, and give liquid manure every other time they are watered; so managed they will grow both vigorously and rapidly. About the middle of August they may be again stopped, but at this operation nothing but the strongest shoots need be interfered with. At the beginning of September they may have more air, only giving shade in the middle of the day, when the weather is very clear, and reducing the temperature a few degrees both by day and by night. None of the species require much support, but during the latter part of the summer it will be found advisable to put a few sticks to the plants so as to open out the shoots a little, which will much assist them in ripening up the wood and inducing the formation of flower-buds; reduce the heat as the power of the sun declines, and for the two concluding months of the year they may be kept in a night temperature of 55° with 10° higher in the day: this will stop them making much progress. If required in flower early, a portion of the plants must be placed at the commencement of the year in a night temperature of 65°, with an increase of 5° in the daytime, keeping them near the glass, and the soil moderately moist; this will soon induce the flower-buds to swell, and they will then open in succession, the strongest leading shoots the first. In cutting the flowers, no more of the wood than can be avoided should be cut, as they will push growth generally from both sides of the bloom-buds, which will set and produce a second batch of flowers. The same plants will keep on opening a succession of flowers for a considerable time, others being brought in at intervals to keep up the supply; such as are wanted to bloom later on in the spring must be kept at a temperature similar to that recommended for the end of the year until the days begin to lengthen in March. They may be placed where they will receive an increase of heat such as that suggested for the early-flowering portion. As the plants go out of bloom, both those that flowered early as well as the latest in bloom, ought to be well cut back, and if they have any insects upon them they should, when thus exempt from soft growth, be thoroughly washed with or dipped in an insecticide strong enough to kill both the full-grown insects and their eggs; this washing may, with advantage, be repeated two or three times in the course of a fortnight, before they have recommenced a fresh growth, now keeping them in a temperature sufficiently high to push them on; as soon as they have broken freely turn them out of the pots, and remove as much soil from them as can be taken away without destroying many roots. Give a 4-in. or 6-in. shift according to the size the plants are required, increasing the temperature as the season advances, shading when needful, giving air, and syringing daily as in the preceding summer. When the pots get filled with roots they must be well supplied with manure water, and any shoots that take an undue lead shortened; beyond this they will not require stopping this season, as the plants are naturally of a bushy habit, and if the shoots be kept tied out they will generally break of their own accord, as well as push up numbers of strong growths from the bottom. In the autumn, as before, keep them drier, and discontinue both the use of the syringe and shading, giving more air and less heat; wintering as previously advised. After flowering they may again be cut back, the soil partially removed and replaced with new, using larger pots; or, if smaller plants be considered preferable, the old ones may be destroyed and replaced by those of a smaller size, to accomplish which arrangement a fresh lot should be struck each year and grown on as already recommended.

The following kinds are all good, and deserving of general cultivation, viz. :—G. intermedia, which, for ordinary purposes, may be considered the best; the flowers when first opened are milky white, turning yellow as they get older; it is good in foliage, a free grower, and equally free in flowering. G. Fortunei is a very strong-growing kind from China, the flowers of which are proportionately larger than those of the last-named species. G. radicaus major is a compact, smaller grower, with leaves and flowers much less than either of the preceding; suitable for growing in a small stove; it is also from China. G. citriodora, a dwarf-growing plant, has much smaller flowers than any of the above, and is a desirable sort for either large or small collections; it comes from Natal. G. Stanleyana, which is a remarkable plant, very distinct from all the others, attains a considerable size, the branches assuming a flat, horizontal position. The singular-shaped, white, purple-spotted flowers are produced on the upper sides of the shoots, standing above the leaves. Any one requiring a very distinct flower, differing from anything else in general cultivation, will not be disappointed with this. It is a native of Sierra Leone.

As regards insects, all the family are particularly subject to the attacks of scale and mealy bug, which must be diligently sought for during the growing season with sponge and brush, and also destroyed by washing with insecticide, which latter, however, it is not safe to use when the flower-buds are formed, or it will often cause them to fall off. If thrips or green fly make their appearance, they are best destroyed by fumigation. Red spider is rarely troublesome, the continued syringing during the growing season generally keeping it in check.

T. Baines.

VARIETIES OF COLEUS.

Nothing is gayer at this time of year in the warm greenhouse than the different kinds of Coleus, of which the new one called Pine-apple Beauty is a striking example. It is a sport from Princess Royal; one half of the leaf is bright crimson, the other half golden-yellow. It is dwarf and compact in habit, and consequently makes a showy specimen plant. Among other new sorts may be mentioned Brilliant de Vaise, a distinct variety irregularly striped and blotched with rosy-crimson and pale green on a yellow and sulphur-marbled ground. M. Comte is a deep bright green, beautifully netted and blotched with maroon-purple; in habit it is stiff and short-jointed. Duchess of Edinburgh, with its many and varied hues of colour, is a very effective kind if grafted on Souvenir de Lierval, as it retains its colour and leafage much longer than it does on its own bottom. I have plants with several varieties grafted on one stock, the most remarkable being Brilliant de Vaise and Golden Gem grafted on the Duchess of Edinburgh, which have become inoculated with Brilliant de Vaise, two shoots, one above and one below the graft, being spotted and blotched like Brilliant de Vaise, while Golden Gem retains its character. Brilliant de Vaise, grafted upon elegans, also inoculates the stock, while others show no signs of variation. The very gayest and most beautiful varieties are—Crown Jewels, ruby-crimson, with golden-yellow margin; Merrimac, a fringed sort with a lemon-coloured ground, having a bronze-red blotch in the centre, and spotted; Golden Gem, bright crimson, with a yellow-fringed margin; J. B. Rendatler, maroon-crimson, with broad belting of lemon-yellow; Prince Troubetskoi, light crimson, with broad bands of pale yellow; Mr. E. G. Henderson, crimson, with a narrow, pale yellow-beaded edge; Zanzibar, canary-coloured, blotched with crimson in the centre, varying at times to rose and cream colour; Comte de Segar, violet-tinted crimson, with

a bright yellow-beaded margin—a grand variety; Souvenir de Lierval, a bright yellow, reticulated with reddish-crimson, dwarf and close in habit; M. Emile Chaté, violet-shaded crimson, broadly banded with bright yellow; Comte de Circourt, purplish-crimson, with a broad margin of pale yellow; Spotted Gem, greenish-yellow, having chocolate-red blotches and light red markings; M. Fries, purplish-crimson, broadly banded with greenish-yellow; and aureus floribundus, a kind with small yellow leaves, having a fine marginal line of dark brown—habit, dwarf and bushy, not exceeding 6 in. in height—a charming little plant if intermixed with darker sorts.

R. H. B.

WINTER-FLOWERING CROCUS (C. BYZANTINUS).

This is a distinct and beautiful late autumn and winter-flowering Crocus, and it is, moreover, one of the earliest introduced of all our exotic species. A figure of it was given as long ago as the beginning of the seventeenth century (1601) by Clusius, from whom the specific name C. byzantinus is adopted, he having received it from Constantinople, where, however, it is unknown to more recent authors. Gerarde, Parkinson, and other early English writers give Constantinople as the habitat

Crocus byzantinus.

of many plants introduced in their time on no better authority, as it would seem, than that the plants so credited came to this country from that quarter. This Crocus has long been in cultivation at Kew, and Colonel Trevor-Clarke has also flowered it in his collection of rare bulbs at Welton Place, Daventry. The annexed engraving represents the habit of the plant, which is characterized by the three inner segments being much smaller than the outer ones, thus giving the flower quite an Iris-like appearance. The colour of the flower is a bright purple approaching white at the base of the segments. The plant flowered on the rock-work at Kew two years ago, and nothing could well be prettier than were its purple buds and slightly paler fully-expanded flowers, as seen on a soft Mossy carpet of the bright green Arenaria balearica, one of the most delicately beautiful of all low-growing plants for draping moist, sandstone rocks, or the little bays and interstices between stones and root-work, which form such cosy and otherwise genial habitations for this and many other rare and beautiful bulbs. Mr. Barr has hundreds of bulbs of this charming species just now pushing their purple buds through the ground in his nursery at Tooting. Cultivated in pots in a cold frame or unheated greenhouse having a sunny aspect, this, and several other late-flowering species might be grown with advantage, and thus treated they would prove most welcome, flowering, as they do, before even the earliest of the Dutch varieties of C. vernus and C. aureus have made their appearance. It is figured in the "Botanical Magazine," t. 6141.

B.

ORCHID CULTURE IN AMERICA.

In a letter received from Mr. Chas. H. Snow, of Baltimore, that enthusiastic and successful cultivator of Orchids, as well as experienced traveller in the Tropics, enumerates some of the difficulties with which Orchid growers in the United States have to contend. He says—Our sunlight and heat are frequently so intense, and our winds so drying, that we find it hard to keep up the requisite proportions of heat, light, and moisture, at the same time. Our changes of temperature are so great that I have seen the thermometer fall in twelve hours from 55° (moist and rainy) to 12° (clear and cold with high winds). Then, again, last summer we had a month or so of hot weather, when the thermometer never fell below 80° in the shade night or day. At such hot times cool Orchids stop growing, but Dendrobes, &c., grow like Willows. At such times it is impossible to keep the houses moist, and I soon found that it would not do to depend upon atmospheric moisture. I use pots (perforated with holes) for most of my Orchids, and keep the plants high above their rims, well covering the roots with Moss and watering them in hot weather when they require it, just as I do other plants. I find considerable trouble in keeping down the temperature throughout the months of October and November in the daytime. Our sun is so bright that the thermometer often rises up to 80° with all the ventilation I can give, and that without fire-heat. I have thus to be careful that many Orchids do not break into a second growth, though I encourage it in the case of small plants, giving them moisture carefully, and so get two growths in a year. We have no trouble in maturing our growth when it is large enough, for even in winter we have very few cloudy days. I see by a journal which I kept that we had but ten cloudy or rainy days in October, November, and December last year; in fact, we have very little rain in winter; snow takes its place, and as soon as the storm is over, the sun comes out bright and clear. I have just been reading your remarks on "the spot" in Orchids in The Garden, and my own experience on that subject is the same as yours. I find very few Orchids with pseudo-bulbs affected by it, but all that class which grow like Aërides, the fleshy-leaved Oncidiums, like O. Lanceanum, also O. juncifolium and some Brassavolas from Demerara and the hotter parts of South America, to be particularly liable to its attacks. I have cured it in several cases by keeping the spotted plants much drier than the others, and by taking great care in watering them. Spot is no doubt caused by too succulent a growth followed by damp and a cool temperature. I have also seen Marantas spotted in the same way as Orchids. We have had a fine warm autumn, and many of my Orchids will bloom a month earlier than they did last year. If it were not for our hot, dry winds, we could easily grow Orchids here in the open air from June to September. I had a plant of Sobralia macrantha that got infested with mealy bug; I placed it out-of-doors about the middle of May, where it was exposed to sun, heat, and rain; I gave it plenty of water and it bloomed finely, and when I put it into the house again it was as clean as could be. I find that white scale is plentiful in South America; I received some Cattleyas direct from their native habitats, and they were covered with it. These observations show that the difficulties with which we in this country have to contend, are not so great as those experienced by cultivators in some parts of America, and that the fickleness of our climate, so often deplored, is not so great an obstacle to the culture of Orchids as many may think; doubtless, however, Odontoglossums and other cool Orchids will be found to be much easier to manage in the States, when cultivators there adopt excavated houses having proper aspects, and liberally supplied with the pipe troughs for holding water so often described in our gardening papers.

James O'Brien.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Pernettya mucronata as a Pot Plant.—Small, bushy plants of this hardy shrub, taken up in autumn and potted in well-drained soil, are very effective in conservatories, and for other decorative purposes during the winter months. Plants thus treated at Messrs. Henderson's nursery are now thickly set with large magenta-coloured berries, and are very attractive.—S.

Pothos fœtida.—This plant, which is rarely seen in English gardens, is now in flower at Tottenham. It throws up large spathes of bloom in the same manner as Amaryllis, and is a very useful plant for winter decoration.—S.

Training Camellias.—It is seldom that one sees Camellias trained; still it is perhaps as good an arrangement as can be effected with old spindly plants. If the branches be tied in as closely as possible, they will soon break freely from the old wood and make well-furnished plants, which they will rarely do if left to themselves. Plants of this description are excellent for planting at the foot of pillars or iron supports in a conservatory. They furnish the lower part with green foliage where ordinary creepers would not succeed, and when other large growing creepers are trained up these pillars to the roof, the Camellias serve to hide the ugly, bare stems; and when in a healthy condition and full of flower they are exceedingly attractive.—S.

THE FRUIT GARDEN.

LORD SUFFIELD AND OTHER USEFUL APPLES.

A fact which has struck us particularly this autumn wherever we have been, in the north, midland, and western counties, is that, had Apple growers planted the above-named Apple and the Keswick Codlin more extensively than they have done, they would have had an abundant crop of kitchen Apples for at least three months of the year, whereas they have had next to none. These two Apples have everywhere been a good crop, and they are always plentiful when other sorts are scarce. During the last dozen years we have never known them to fail, as most other kinds have done every now and then. Lord Suffield is generally fit for use in July in the south, is in perfection in August and September, and keeps till about the middle of October. In the north and in the colder localities of Yorkshire it does not ripen till the end of September or beginning of October, as was the case this autumn, notwithstanding the warm weather in August, and the fruit keeps till the end of November. One of our workmen brought us a few fine examples to-day (November 23) of this variety which were not only plump and sound, but well flavoured and agreeable to eat, for there are plenty of people who relish a ripe Codlin as a dessert Apple, and Lord Suffield is still better. Here, then, we have a period of nearly five months during which this Apple is in season, and it is well known that for most culinary purposes Lord Suffield is one of the best. It is for cottagers, however, and the owners of small gardens who cannot afford space for a collection of varieties that it should be recommended, and those who take an interest in cottage gardening on their estates could not do better than distribute it extensively. Poor cottagers in rural districts are strangers to Apple tarts or dumplings when they have not the fruit in their own gardens. Lord Suffield, however, is not only a sure bearer of large and excellent fruit, but is also an early bearer. We have seen it grafted on the French and English Paradise stocks, and on the free stock, and really could not say which bore best, but for general purposes the free stock is to be recommended. The trees bear freely at once, no matter how young they are. We have seen young standards, a year or two planted, the young branches of which had to be supported with stakes, so heavy was the crop: this was in a working collier's garden. Standards 6 ft. high make the best trees; they should, if practicable, be planted in a good, deep, loamy soil, well drained; but any ordinary good garden soil will suit the free stock, even though it be shallow. Of course the deepest and best soils produce the largest fruit. Standards may be planted as they come from the nursery, and those who do not understand pruning should leave the trees alone; they do not need it; the faster they grow the better, and the more fruit will there be upon them. The Keswick Codlin Apple differs from the Lord Suffield chiefly in being smaller-sized, but it bears even more freely. It is a well-known kind, and, being one of the hardiest, is well adapted for cold situations. When the trees get old, particularly if they are growing in a poor soil, the fruit becomes small, but keeps its good qualities. Vigorous young trees, on which the shoots have not been shortened, are sometimes seen bearing great crops, the fruit being produced along the branches like ropes of Onions. Among other good sorts for planting with the above two are Dumelow's Seedling, Hawthornden (next to Lord Suffield for a sure bearer), Nelson Codlin, Rymer, Tower of Glamis, and Waltham Abbey Seedling. Perhaps it would be difficult to name another half-dozen kitchen Apples, besides the two first-named, equally good for a small collection.—"Field."

Apples for Ornament.—A great deal more might be done in this direction than is at present the case. It is no more trouble to grow an Apple tree than it is an Ash or Lime tree, and the Apple when in fruit is certainly far more attractive than either of these, and when in bloom it is not only ornamental, but useful and valuable, and if it pay the Americans to grow Apples for English markets it would pay Englishmen. The best varieties of Apple trees to plant in shrubberies for ornament are the Hawthornden, the Emperor Alexander, Lord Suffield, and Beauty of Kent. These are all trees of vigorous habit and fine foliage, and produce large clusters of bloom and bear abundant crops of large, handsomely-coloured fruit, which is unsurpassed for culinary purposes.—V.

The Doyenne Pear as a Stock.—Many years ago Ellwanger & Barry, of Rochester, had a very fine and promising orchard of dwarf Doyenné Pears. Just as it had fairly come into bearing, the black mildew or scab began to attack it, in common with nearly all other trees of this sort in Western New York, and when no hope appeared for improvement, they worked these trees over to the Duchesse d'Angoulême and some other sorts. By inserting many grafts into different parts of each tree, towards the stem or centre, the entire change to good-bearing trees was effected in two or three years. This was done many years ago, and the trees are now among their best and most valuable dwarfs. They recently expressed their opinion that there is no stock for dwarfs equal to that of the Doyenné, on which these double-worked trees grow.—"Country Gentleman." [We suppose the White Doyenné is the variety here alluded to].

Draining Orchards.—Prof. Lindley mentioned a case where an orchard of Apples, Pears, Plums, and Cherries, after flourishing and bearing well for a time, gradually became more and more feeble, until the trees ceased to grow. The owner drained it by cutting ditches 3 ft. below the pan which formed the bottom of the upper soil. The next year the trees put on "a youthful vigour," and in the second and third seasons they made shoots 4 ft. or 5 ft. long. The result was ascribed to the increased warmth of the subsoil, in consequence of the warm rain penetrating the porous earth, and which increase in temperature was estimated at 10° or 15°. There was probably another reason. Manure or other fertilizing substances, under water, are of little or no value, being locked up by the cold liquid; but as soon as this water was removed by drains, the enriching materials were made available to the roots of the trees.—V.

Madresfield Court Black Muscat.—This is a magnificent Grape, but it is one which has given great disappointment in many places, so much so that it has been rooted out and destroyed. It is liable to crack, an evil propensity fully described in former numbers. I had indeed almost cut it out myself, but I am glad I did not, for it is now behaving remarkably well and carrying a heavy crop each season with scarcely a cracked berry. For the first two or three years the berries cracked very badly—caused, I have no doubt, by a superabundance of sap, as this Vine inherits great vigour and strength in its young stages, and the berries have very thin skins; but when the Vine is once established and bearing a good crop, and the atmosphere of the house is kept rather dry, when colouring commences I find very little trouble with cracking; and, with the roots entirely under control, I consider the results would be more satisfactory even in the early stages of the Vine.—J. A. H. G.

Apple Butter.—The very best way to dispose of surplus Apples has been discovered and long practised by some cultivators hereabouts in the manufacture of Apple butter. I suppose they would hardly agree to call the fruit thus used "surplus," for their supply of Apple butter is always provided whenever there is a good crop. Going a few miles into the town of Rush last week, I saw on three places large kettles of Apples and cider boiling over out-of-door fires, the cooking superintended sometimes by the women, and sometimes by the men of the household. Almost all the cultivators in Rush make Apple butter, and in large families one barrel, or even more, is not considered too much. It will keep through the year in covered vessels without spoiling, and is the staple sauce for autumn and winter use. Apple butter is simply sweet Apples peeled, quartered, cored, and then boiled in sweet cider until the Apples are in a "mush," and the cider has been reduced one-half in quantity. It takes nearly two barrels of cider to make one of Apple butter, but, fresh from eating some of it, I am quite sure that it "pays." One-half the Apples may be sour if more tartness be needed, but this is usually made up by the failure to get cider from all sweet Apples. No sugar is needed, and the only difficulty in making Apple butter is in keeping it from burning while cooking. This requires constant attendance and continual stirring with a long ladle. If the Apples be allowed to settle to the bottom of the kettle, they will burn and spoil the whole.—"Albany Country Gentleman."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Cultivation of Orchards.—Professor Beal says that he has never seen or heard of an Apple orchard injured by too frequent culture, but admits that at some places in Michigan it may not be necessary after the trees have become well grown and established. When to cultivate or not, he remarks, depends on several conditions. If the colour of the leaves be good, the growth good, and the trees bear plenty of fine fruit, they are doing well enough even if in Grass. But if the leaves be pale, the growth of the annual twigs much less than 1 ft. in length on trees twelve years old, and the fruit small and poor, something is the matter; they are suffering for want of the plough, harrow or cultivator, or a heavy mulch or coating of manure.

Clay Soil for Pears.—The Pear tree, as well as the fruit, grows to great perfection in and about the beautiful village of Canandaigua, Central New York. Trees that were planted there when the town was first settled are now 60 ft. or 70 ft. high, and 16 in. to 18 in. in diameter, sound, healthy and thrifty, and bid fair to continue so for years to come. The soil in and about this village is clayey loam, with a stiff clay subsoil. There are a great number of trees along the St. Clair River that were planted by the early French settlers, which are prodigious in size, healthy and fruitful, and the soil is clay.

PLANES ON RIVER EMBANKMENTS.

It is only a few years since the possibility of growing Planes on the Thames Embankment was doubted by many; now we have them not only growing, but thriving as well as anywhere. There is, indeed, good reason to think that they will soon overtake their older Paris relations, and as we fortunately are not often like our neighbours, obliged to boil the soldier's pot or warm the famished citizen with our fine trees, we may expect them to live long; how long they may live we cannot say, but there is some proof that the Plane is a very long-lived tree even with us. Other trees we have in all stages of decay, but where are the crippled Planes? The oldest and biggest trees in London seem infants as regards freedom from decay or debility. There being such noble promise of fine trees, more than ordinary care should be taken to guard against impeding their growth from over-planting or want of timely thinning. The Planes on the Paris quays are not unfrequently too close together; such, we hope, will not be the case here. When timely thinning is not carried out it is not only that the trees are not allowed to assume their full beauty overhead, but the exhaustion of the soil by the trees to be eventually cut away is an important consideration; therefore we should never wait till the trees crowd each other, but cut away as soon as they come in contact.

Planes on River Embankment.

Traffic in the Climbing Fern.—Among the new industries of the last few years is the collection and sale of the creeping Ferns so common in New England woods. This business originated at Greenfield, where it is now carried on extensively, and was begun there about four years ago. Few bunches were sold at first; but as the demand has steadily increased, the woods east and south-east of Springfield, in Longmeadow, Wilbraham, and Somers, have been carefully gleaned. Often the value of the Ferns growing on a single acre of woodland will exceed that of an acre of Corn. The season for gathering these Ferns begins about the middle of August and lasts till late in the autumn. Originally fresh Ferns were sold, and those largely for Christmas decorations, but the trade in dried Ferns is now by far the largest part of the business, and gives employment to a large number of hands. One dealer keeps about twelve girls at work drying. They are used mainly for house wall decorations.—H.

IMPORTED FRUITS AND VEGETABLES IN COVENT GARDEN MARKET.

Our trade in imported fruits and vegetables is by many supposed to be of modern date, but in reality many of the fruits and vegetables now commonly cultivated in our gardens were imported from the Continent for the tables of the rich long before they were cultivated in their gardens; and this was especially so in the case of Peas and Salads, Apples, Cherries, and other hardy fruits. Orchards for the sale of fruit were first organized by the fruiterer to Henry VIII., and among the useful plants which had long been neglected in English gardens were the culinary vegetables, which however began to be pretty generally grown in the last-named monarch's gardens, at Richmond and at Greenwich, where Melons and Cucumbers were forced, as they had been at Rome 1500 years before. Grapes, Peaches, and Apricots were also about this time established on a "14 ft. wall at Nonesuch." The time of the Reformation may be taken as the birth of economic or industrial gardening in this country, for although Tusser, in his "Five Hundred Points of Good Husbandry," mentions 150 sorts of fruits and plants grown in gardens, including all the common vegetables, yet "kitchen garden wares" continued to be imported from Holland and fruits from France, until market gardens began to furnish reliable supplies about the year 1600, "before which date," says Fuller, "we fetched most of our Cherries from Holland, Apples from France, and hardly had a mess of rath-ripe Peas except from Holland, which were dainties for ladies, they came so far and cost so dear. Since, however, gardening hath crept out of Holland to Sandwich in Kent, and thence to Surrey, where, although they have given £6 an acre and upwards, they have made the rent, lived comfortably, and set many people on work." Although the imports of vegetables diminished after the establishment of market gardens two or three centuries ago, this was not the case with fruit imports, which, on the other hand, seem to have steadily increased, and in 1818 Mr. Salisbury in his "Hints to Orchard Fruit Growers," informs us that he saw £20,000 worth of imported Apples in one day in Covent Garden Market, and in the fruit warehouses, then in Fleet Street. At the present time we are paying a sum of

£6,000,000 annually for imported fruits alone, and yet news reaches us from the Continent that fruit-culture is being rapidly extended in many agricultural and pastoral districts, so satisfactory to the fruit growers are the prices now realized in our markets. France, Jersey, Holland, Spain, and Portugal send us Grapes, Melons, and Figs; the great bulk of our imported Apples comes from France and America; Pears from France and the Channel Islands (from Jersey we annually receive £7 worth of Potatoes per acre for the entire acreage); and during the earlier part of the season, when Strawberries, Cherries, and Plums fetch good prices, our own growers have but a poor chance of competing with the Continental cultivator, who, in addition to a sunny climate, cheap labour, and transit charges, and in most cases freehold land, brings a vast amount of intelligent ability to bear on fruit culture as a profitable industry. Now that the acreage of our Wheat and Potato crops is decreasing year by year, and the production of meat is yearly becoming more risky and less profitable, it is a matter of great moment that the importance of gardening as a food-producing industry should receive that attention which it so well deserves. Even the greatest advocate for a meat diet —and for our climate at present this certainly seems desirable —must admit that meat producing is simply a waste of ways and means, so far as the resulting amount of food is concerned, since to fatten a bullock we waste a large quantity of vegetable food or land on which a much larger amount of choice nutritious vegetable food could be grown. That we should import Apples and other hardy fruits to this country at a yearly cost of nearly £2,000,000 is all the more remarkable when we consider how many thousands of acres of cultivated land are yearly devoted to a far less remunerative industry, viz., timber growing, and thousands of acres are left waste which might be made most profitable for fruit culture. Our present land and game laws have much to do with the conservation of uncultivated waste land, so that in reality they are in some measure the cause of our expending so much every year for food products of all kinds. It is singular to observe that the nominal prices of fruit have undergone but little change during the past thirty years, as shown by the retail lists of prices, one of which for December 24, 1842 is now before me, and therein hothouse Grapes are quoted at prices varying from 4s. to 7s. per lb., Spanish fruit 9d. to 1s., and Portugal 1s. to 1s. 6d. per lb.; Pine-apples are valued at 3s. to 5s. per lb., dessert Apples 2s. 6d. to 7s., and culinary sorts 2s. to 6s. per bushel; forced Asparagus 8s. to 10s. per 100 heads, second quality 3s. to 5s. per 100, Seakale 1s. 9d. to 2s. 6d. per punnet, Rhubarb 1s. 9d. per bundle, Mushrooms 6d. to 9d. per punnet, and other produce in proportion; and on comparing these prices with lists of the present date the figures are nearly the same, but of course all kinds of produce are now much dearer than in 1842, since the purchasing power of money is now less by 30 to 40 per per cent. at least than at that date. A great difference is observable in Potatoes, which in 1842, or three years before the outbreak of the disease, were quoted at from 40s. to 70s. per ton, while at the present time they are selling at prices varying from 100s. to 160s. per ton, notwithstanding that our imports of Potatoes are enormous, as shown by the Government returns, where we learn that the principal countries that supply us with Potatoes in bulk are Germany, Holland, Belgium, France, Portugal, Malta, and the Channel Islands, the total value of the produce sent to our markets being £1,070,976. Now that we have an ever-growing population of 30,000,000 people to feed, and according to the latest reports only about 40,000 acres of land specially devoted to gardens, the produce of which is regularly marketed, it need no longer surprise us that our trade in imported fruits and vegetables should be expanding year by year. Notwithstanding these enormous imports, however, current prices are maintained, or rise rather than fall, hence it seems that the demand still exceeds the supply; nor is this demand altogether owing to increasing population, but rather to a growing taste for fruit and vegetables as articles of food among the more intelligent of our labouring population, who, it must be remembered, influence the sale of food commodities far more than the wealthier classes.

Let us now glance at the varieties and retail prices of fruit obtainable in Covent Garden Market at this busy season of the year, and first on the list comes the king of fruits, the Pine-apple, good English-grown fruits of which realise from 5s. to 6s. per lb., while handsome, smooth-leaved Cayenne Pines from St. Michael, weighing from 6 lb. to 8 lb. each, may be bought from 16s. to 18s. each, and smaller fruits from 8s. to 12s. each, according to weight and appearance. The trade in imported Pine-apples is one of the most striking of modern instances of imports restricting the growth of home-grown produce. Ten or twelve years ago many acres of glass houses were devoted to the growth of Pine-apples for market, but this trade is now nearly extinct, most of the old Pine growers having cleared out their Pines and taken up the growth of Cucumbers or Grapes instead, owing to the low prices obtainable since the St. Michael Pines have been sold by auction in such immense quantities during the winter and spring months. The first cargo of 50 imported smooth Cayenne Pine-apples came into the port of Liverpool in 1863 (these having been brought over on the plants), and they were all sold by auction, I believe, to a single buyer for £75, or 30s. each all round. This price gave an impetus to the trade, and the number of Pine-apples sent from the Azores has gone on increasing until we are now told that 50,000 fruits are to be sent to the English market during the season 1876-7. At St. Michael much capital has been spent on this solitary branch of horticultural industry without artificial heat under glass, the Pines being grown in a rich kind of humus or vegetable earth, brought from the mountains in panniers on mules. It costs about 5s. to grow, pack, and transport each fruit to the auction rooms in the City, and the prices now realized for the bulk of the produce are becoming lower every year, and complaints are now being made by the growers who have clearly overstocked our markets, and they must either find new markets elsewhere or grow fewer fruit.

English-grown Grapes upon the whole now sell well, the highest prices being obtainable for good examples of the large-berried Gros Colman, for which from 7s. to 10s. per lb. is realized; Alicantes fetch 4s. to 5s. per lb.; Black Hamburghs, 3s. to 4s., and Muscats 6s. to 8s. The best imported Grapes now to hand are those sent by the Jersey fruit-growers, who have also followed the lead of English cultivators, and grow the handsome Gros Colman variety, for which 5s. to 6s. per lb. retail are obtainable; indeed, some of the best samples are nearly equal to the English-grown fruit in appearance, and consequently realise high prices. Other imported Grapes consist of Lisbon Black, which sells readily at 1s. to 1s. 6d. per lb., or wholesale at 40s. to 50s. per box. The green Almerian Grapes are great favourites with the fruiterers on account of their stout texture and long-keeping qualities; indeed, well-grown clusters, if carefully packed, will keep perfectly fresh for six months after having been cut from the Vine, or even longer. Of this Grape (which succeeds the ordinary Lisbon Sweetwater in the market) there are now several brands, and the prices realised per barrel of from 40 lb. to 50 lb. of sound fruit varies from 27s. 6d. to 37s. Spanish Melons, of both white and green varieties, are obtainable, and realise from 12s. to 21s. per dozen fruits, some of these being of very good flavour, considering the time of year. They are not an article of general consumption, however, and are chiefly in demand at the foreign hotels and cafés, where they are oftener eaten with salt and pepper as condiments than with wine and sugar as with us. Large quantities of French Medlars are obtainable at prices varying from 6d. to 1s. per dozen. Pomegranates and Prickly Pears are also now to hand, but buyers of Pomegranates need to exercise caution, as during the last two or three seasons a large proportion of the fruit imported to this country has been diseased and comparatively worthless. When these fruits are in perfection they are agreeably subacid, and form a picturesque and desirable addition to the winter supply of dessert fruits. West Indian Bananas now reach us in good condition, the retail price being from 3s. to 4s. per dozen fruits, or 18s. to 20s. per bunch, according to size and quality. This is one of the few fruits which ripen best when cut in a green state, and some of the best samples sent to our market are the most delicate and delicious in flavour of all imported fruits. Pears are represented by both continental and home-grown fruit, and the prices realised in both cases are about the same for the best examples. Easter Beurré, in cases of fifteen to twenty fruits, realise 9s.

to 10s. per case; cases of fifty to sixty smaller fruits from 20s. to 25s.; Glou Morceau, in cases of twenty-four to thirty-two fruits, from 12s. to 14s. per case. Chaumontel and Bon Curé are cheaper. Stewing Pears, such as Catillacs and Uvedale's St. Germain, from 10s. to 12s. per case of sixty to seventy fruits. Superior specimens of Easter Beurré Pears reach us from Californian growers, and these realise 8s. to 9s. per dozen fruits. These splendid Pears are ripened in one of the finest of all climates for hardy fruits, and the dry, sunny atmosphere in which they have been ripened conduces largely to their good flavour and long-keeping qualities. Now that the Western fruit-growers have taken to supplying our market with Pears as well as Apples, we may hope, as a result, that the high and exclusive prices now asked for French produce may become more reasonable. Apples of the Newtown Pippin variety realise 27s. to 40s. per barrel, and are the best flavoured of all Apples now obtainable in the market at anything like a moderate price. The crimson-cheeked Baldwin Apple, also a noted American variety, is now selling at 9d. to 1s. per dozen fruits, or 20s. to 22s. 6d. per barrel. American Russets of good quality fetch 25s. per barrel, while culinary kinds, represented by Spitzbergens and American Greenings, realise 22s. 6d. per barrel. French Dieudonnés and Reinettes sell at 12s. to 14s. per barrel; Blenheim Orange Pippins realise from 8s. to 10s. per bushel, and the finest samples a little more. Oranges are plentiful, but not yet of very good flavour; St. Michael fruit sells at 14s. to 25s. per box, according to size and quality (a box holds 420 fruits); Malagas of best quality and good colour, 18s. to 20s. per box; Valencias at the same price; and good Lisbon fruit varies from 16s. to 18s. per box. The best flavoured of all Oranges now obtainable is the little brittle-skinned Tangerine, fruit of which sell at 10s. to 12s. per 100; Lemons sell at about the same rate as Oranges, or wholesale at 60s. to 80s. per 1000, according to quality; Nuts and dried fruits are plentiful; Kentish Cobnuts are worth 115s. per 100 lb., or "cleaned and coloured," 14s. per 12 lb.; Sapucaia Nuts fetch 1s. to 1s. 6d. per lb., and are of excellent flavour, superior in that respect to their allies the Brazil Nuts, which may now be bought at 20s. per bushel; French and Naples Walnuts sell at 58s. per cwt.; Almonds, 54s. per cwt., and new Spanish Hazel Nuts and Barcelonas, 16s. to 18s. per cwt.; Chestnuts fetch 10s. to 16s. per 100 lb.; Brazil Nuts in the pods, 5s. per dozen, and Cocoa-nuts vary from 28s. to 32s. per 100, according to size and quality. Vegetables of all kinds are plentiful, owing to the mild season. Seakale of excellent quality realizes 2s. 6d. per bundle; Cucumbers, 12s. to 21s. per dozen, according to quality; English-grown Cauliflowers, 3s. to 3s. 6d. per dozen heads; Mushrooms are plentiful, and it is interesting to note that while the small or "button" produce realises 18s. to 24s., the large or full-grown Mushrooms only fetch 15s. to 18s. per dozen punnets. The disparity in price between imported and English-grown Horseradish is now somewhat remarkable, since while the best English root fetches 4s. per bundle of twenty sticks, imported German and Dutch produce fetches only 15s. to 16s. per dozen bundles; French Cabbage Lettuces now sell at 1s. per dozen; English-grown Cos Lettuce at 2s. to 2s. 6d. per score; Jersey Radishes at from 1s. to 2s. per dozen bunches; French Endive at 1s. 9d. per dozen; Jersey French Beans, 2s. to 2s. 6d. per 100; Barbe de Capucin, 5s. per dozen; and Globe Artichokes from the south of France realise 4s. per dozen heads; forced Asparagus may be obtained at fancy prices, and Rhubarb has made its appearance. It is difficult to imagine any salad vegetables fresher and more tempting than the young Radishes, Lettuce, Endive, and Barbe de Capucin, as sent from the French and Channel Islands gardens, where they are produced by the most ordinary appliances of culture, and in enormous quantities, since what is sent here is in many cases but the surplus stock of the Paris markets. B.

An Ornamental Grass (Andropogon formosus).

Gram.—This useful article of food, large quantities of which are used in India, is the product of the common Chick Pea, or Bengal Gram (Cicer arietinum), a hardy annual, herbaceous plant of the leguminous family. It is found wild in the south of Europe, and in Africa and the West of Asia. It is much cultivated in Spain, and there used as a leguminous esculent. It grows about 1 ft. high, branches much, and the leaves are pinnated. The flowers grow singly on slender stalks, and are of a bluish-purple colour. They are succeeded by oblong, hairy pods, usually containing two seeds. The mode of cultivation is similar to that of other leguminous plants. This plant is often largely employed by the natives as a refrigerant in fever, and other medicinal purposes. A small quantity is imported into England, it is thought for the purpose of adulterating coffee.—M.

ORNAMENTAL GRASSES.

(ANDROPOGON FORMOSUS).

The genus Andropogon has long been represented in English gardens by the well-known Lemon Grass (A. Schœnanthus of our conservatories), an Oriental species, the fresh leaves of which emit so delightful an odour when bruised. But the hardier species, which include several desirable kinds, are com-

paratively little known, and are indeed of somewhat recent introduction. Among those most deserving cultivation may be named the A. argenteus, a Virginian species, growing about 3 ft. high, with dense spikes clothed with long, silky, white hairs; A. bombycinus, a dwarf species, with short, dense, silky spikes; A. strictus, of taller growth and erect habit, with loose, silky panicles tinged with violet; and A. Schimperi, a fine Abyssinian species, forming large tufts of dark green leaves, with stems 5 ft. to 6 ft. high, surrounded by a much branched panicle of golden hue. To these may be added the interesting plant, of which the accompanying woodcut represents a vigorous tuft, A. formosus, a species probably of Brazilian birth, but respecting which our information is very imperfect. The name is apparently of garden origin, but however that may be, it is a Grass of highly ornamental effect in isolated specimens when planted in good soil, in which it will attain a height of 6 ft. or more. The graceful habit of the long, drooping foliage is much enhanced by the rather conspicuous central stripe of white which marks each leaf. The inflorescence is produced rather late in the autumn, and adds but little to the attraction of the plant, the panicles being comparatively slender and lax. It rarely matures seed unless cultivated under glass, but it may be readily propagated by division in autumn or spring. W. T.

Lime and Lemon Juice and Disease.—Perhaps in all the "wonders of the vegetable kingdom" that have been recorded in books, there is nothing more interesting and instructive than the following, from a leading article in the "Times" of Dec. 4. Though the fact alluded to is well known, it is none the less worthy of being told again:—The facts about scurvy, regarded from a medical point of view, are few and simple. For many years the cause of the disease was only imperfectly known, and was obscured by the circumstance that it may be promoted or retarded in its operation by many subsidiary influences. Scurvy is a direct result of the absence from the system of certain matters which are supplied by fresh vegetable juices, and which, as far as we know, can be supplied from no other source. In other words, it is a result of starvation as regards only one of the elements of a wholesome diet. This partial starvation produces its effects more or less quickly in proportion to the general power of resistance to injurious influences which the sufferers may possess. It acts more quickly upon those who are also exposed to cold, to overwork, or to insufficiency of diet of other kinds, than it does upon those who are favourably circumstanced with regard to such particulars. We have not, it must be admitted, any evidence upon which entire reliance can be placed with regard to the preventive influence of Lime or Lemon juice in the Arctic regions, because a good deal which has been said and written upon the subject will not bear close scrutiny, or does not embody all the facts which would be necessary for the formation of an unassailable conclusion. From every other part of the world the testimony is overwhelming. There is as yet no instance upon record in which the crew of a ship, in a voyage of whatever duration, or under whatever circumstances of hardship, has had a single case of scurvy if each man had received an ounce of genuine Lime juice daily, and had been seen to drink it. Cases of scurvy notwithstanding Lime juice have been reported from time to time, but they have all broken down under investigation. In some the liquid bought as Lime juice has turned out to be only a fraudulent imitation, prepared with tartaric acid and water. In some the quantity taken had been insufficient; and in others the men had made away with the juice instead of drinking it. As a general rule, anything which supplies a necessary ingredient of food is also grateful to the palate, but to this rule Lime juice seems often to be an exception, and sailors are apt to throw it away if they be not closely looked after. In all well-managed ships the administration is a sort of drill, and the men are made to swallow the juice before an officer and then to cross the deck with their cups inverted. With regard to the influence of temperature, Dr. Buzzard relates the very instructive experience of the French army during the Crimean war. The men had abundance of fresh meat but no fresh vegetables and no Lime juice, and they suffered terribly from scurvy, which first showed itself in the winter of 1854-55. As spring advanced and vegetation became abundant, the men ate quantities of Dandelion and other herbs which they were able to gather, and the disease greatly diminished. As July approached, the sun dried up the surface of the ground and destroyed the herbs, and in the course of the next three months, the finest and warmest in the year, no less than 5000 cases of scurvy occurred. On the whole, there seems to be no room for doubt that the presence of scurvy means the absence of vegetable juices, and nothing else; and that no reliance upon any other agency than these juices for its prevention is either in harmony with science or warranted by experience. If a scurvy patient survive to eat fresh vegetables, his death is almost unheard of, and the rapidity of his recovery is something to which there is scarcely a parallel in medicine. A single meal and a few hours produce so great a change that the patient would be hardly recognizable by any who were not familiar with such cases.

PLATE LIV.

THE SCARLET SCUTELLARIA.

(S. MOCINIANA).

This plant, of which the annexed is a coloured representation, is one of the most beautiful of all shrubby-habited Labiates, and its brilliant colour, free-flowering habit, and easy culture render it one of the most desirable of all autumn or winter-blooming plants for indoor decorative purposes, and as such it has been grown at Chiswick for several years with great success. During the past autumn we have also seen in Covent Garden remarkably well-grown plants of it in small pots, each plant bearing a strikingly handsome head of brightly-coloured flowers, although the entire height of the plant that produced them seldom exceeded 12 in. For associating in groups with Primulas, Cyclamens, winter-blooming Heaths, and forced bulbous flowers, this plant is especially effective, being as brilliant as a Poinsettia, from which, however, it is quite distinct both in habit of growth and colour. It is easily increased by means of cuttings made of the young wood taken off with what is termed a heel. Such cuttings root freely if inserted in a genial bottom-heat of about 70° in a propagating case, or they may be struck with equal success covered with a bell-glass. A warm greenhouse temperature is amply sufficient in which to grow this Scutellaria; and if the plants be grown on a shelf near the light, a shorter-jointed habit of growth than usual will be induced. Among other species more rarely cultivated in our gardens may be named S. micrantha, a native of Northern China, a handsome species bearing spiked racemes of blue flowers, and a small scarlet-flowered plant, named S. coccinea, from Mexico. There are fully 150 species in this genus, most of them very showy and beautiful. B.

The Electricity of Leaves.—At the last meeting of the Royal Society Dr. Burdon-Sanderson read a paper on the mechanical effects and the electrical disturbance consequent on excitation of the leaf of Dionæa muscipula. The mechanism by which the leaf of Dionæa closes has already been studied by Mr. Darwin, but the experiments now made add much to our knowledge of the nature of the excito-contractile process in plants and animals. The first set of experiments was to determine the time that elapsed between touching one of the sensitive hairs and the first perceptible motion. The touches were given at intervals of 2 minutes. The first six produced no mechanical effect. Then twenty-five successive touches produced effects which variously took 7, 5, and 3 seconds before they caused actual motion. The twenty-sixth touch produced motion in 2·2 seconds, and at the twenty-seventh the leaf closed. It was found, by attaching a 1-gramme weight, that with each touch after closing, the leaf clenched tighter. With regard to the electrical condition of the leaf, it is found the external surface is positive to the internal. The electrical disturbance is strictly limited to the surface of the leaf, and does not extend to the petiole; the petiole simply serves as an ordinary moist conductor. Experiments were also made to ascertain the centre of greatest electrical intensity in the leaf, and tables giving the results of many experiments have been drawn up. In animals it has long been known that only the nervous and muscular tissues are electromotive, and it would appear that in plants it is the leaf alone that is electromotive. It was found by shifting the needle-points to different parts of the leaf that when one part was exhausted and would produce no effects other parts would, thus indicating that the excitability of the plant is a property possessed independently by the protoplasm of every cell in the excitable area. Experiments have also been made as to the time that elapses between touching a hair and the manifestation of electric disturbance, and it is found to be from one-sixth to one-eighth of a second. Similar experiments on other plants are promised.

HE SCARLE[illegible] [illegible]ELLARIA [illegible]TINIANA [illegible]

THE GARDENS OF THE GRAND TRIANON.

These are part of the series of gardens at Versailles, and very instructive from the point of view of garden design. They form, perhaps the most repulsive of all the gardens of the same school yet made. Many other gardens have something to distract attention from the puerile or barbarous nature of their plan, but here the geometry stares at us naked as a prison wall. They, too, are in a position not demanding a geometrical garden at all, and as an adjunct to a charming little palace. The cut gives some idea of one of the dismal prospects which meets the eye of the visitor wandering through the grounds in search of some interest or beauty. According to the books, this is an orthodox variety of garden design—"very well in its place." To us it is clear that it has nothing at all to do with garden design in the sense which that word will bear in the future. The art to which it belongs is that of destroying all beauty, or possibility of beauty, in a spot of ground specially designed by man for his delight.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Large-flowered Pelargoniums, that were cut back after blooming, and which, when some fresh growth had been made, were shaken out and placed in smaller pots, will by this time have filled the soil with roots, and should now be moved into their flowering pots. In order to grow them well they should have good fresh fibrous loam, well enriched; and if something near one-sixth in bulk of manure were not mixed with it at the time when it was put together more should now be added, and a little sand in proportion to the more or less sandy nature of the loam, but altogether not so much as is wanted for the generality of other soft-wooded subjects; 8-in. pots are big enough for the largest specimens. An inch of crocks in each pot will be sufficient drainage if over this be put a few of the more fibrous pieces of the loam; in potting ram the soil so as to make it firmer in the pots than in the case of most plants. Pelargoniums that were struck in the spring and moved during the summer into 4-in. pots, should now have a 2-in. shift, not disturbing them any more than is unavoidable in removing the crocks used for drainage from the bottom of the ball, which will now be interlaced with roots;

Striking result of the "Genius of Le Notre!"

Window Gardening for the Poor.—Some time ago an effort was made in Manchester to increase the love for plants through the medium of Hyacinths, which were given away, ready planted in pots of earth, by the hundred. With every bulb was given a stout card, some 9 in. by 6 in., containing instructions as to the treatment to which the plants were to be subjected. How much better it would be for the poor of London if instead of receiving the surplus bedding plants from the parks in autumn—which under even favourable circumstances are far from being easily kept through the winter—they were to have one or two Hyacinths, Tulips, and similar easily grown plants given them that would flower and cheer them in the dull days of winter! If this could not be done, the expense of wintering the plants now given away in the autumn, and presenting them in spring, would not be much. Such a system would certainly be more likely to create a love of flowers among the poor than the wretched assortment of plants one now sees in windows in spring, chiefly through their not having been established before being given away, and partly because no instructions were given respecting the treatment which they require. Water is frequently given to plants already completely soaked as regularly as clockwork, and that often before breakfast. Surely those who take such pains deserve all the encouragement possible by giving them plants that will succeed, instead of such as even a good cultivator might fail to winter.—C. S.

young plants of this description usually grow much more vigorously, even through the autumn months than older cut-back specimens, and they should now and then have the points of the shoots pinched out in order to induce them to break. The shoots should be tied out in a horizontal position, level with the rim of the pot, and it is essential that this should be attended to whilst the young growth is pliant and will bend, even if there be no intention of shaping them into large trained specimens, or the plants will ever after have an erect, unsightly habit of growth. The fancy varieties require similar treatment in every way, except that they do not need pots quite so large—proportionate with the size of the plants. The shoots of these when the wood gets fully matured are even less capable of being bent than those of the large-flowered kinds, consequently they must be trained into shape whilst young, after which they want very little support in the way of sticks. Pelargoniums should now be placed as near the glass as possible, so as to give them all the light available. They must for some time yet be kept drier at the root than other greenhouse plants. Examine them carefully from time to time, to see that they are free from aphides, for, although these do not increase just now at a rapid rate, yet, if only a few in number be allowed to go on unmolested, they will be difficult to keep down. The dormant season should be selected for the eradication of insects as far as possible, for then the plants are making the least progress,

and the leaves, consequently, are in a hardier state and better able to withstand severe applications of Tobacco smoke than later on when more active growth has commenced. It frequently happens, especially in the winter, that very few plants in a collection may be found with aphides upon them and all the rest quite free. When this is the case it is simply a waste of material to fumigate the whole house; the affected plants should either be removed to an ordinary garden frame and there smoked, or, what will be found equally effective and less likely to injure the plants, be dipped in or syringed with Tobacco-water, allowing it to remain on the leaves for half an hour, after which syringe them with clean water. This not only applies to Pelargoniums, but to any other plants that may happen to be infested.

Mixed Plant Houses.—Amateurs with only a single house are often perplexed through the winter in their attempts to treat all the different plants they have assembled together in the structure, and are very liable to be tempted to keep up sufficient heat for Coleuses, Alternantheras, and similar subjects which they have grown during the summer, and which require considerable warmth to keep them in health; yet a greater mistake cannot be made than by endeavouring to accommodate such as the above by keeping up a temperature that will excite numbers of other plants into premature growth, which method is certain to injure these much more than the heat-requiring plants are worth; any attempt to winter both in the same house being certain to end in disappointment. A temperature of about 45° during the night is quite as much as it is safe to use with a mixed collection of greenhouse plants. Since the autumn of 1860, which was followed by the memorable frost at Christmas so disastrous in its effects to out-door vegetation, we have not had a season when plants of all descriptions were so ill-prepared to withstand a low temperature as they are at present. The unusually cold, ungenial spring was immediately succeeded by a continuance of excessively hot, dry, parching weather, which stopped the growth of vegetation, generally inducing a state of premature ripening; that was followed by heavy and continued rains through the latter part of August, September, and October, during which time we usually have weather calculated to arrest growth, and accelerate the ripening and maturing of that made in the summer, instead of which immense numbers of plants were again started; deciduous trees and shrubs were more affected by it than evergreens. Roses especially pushed off again into growth, and have kept on up to the last few weeks, retaining their leaves in quantity. In the kitchen garden most vegetables were so influenced that they have continued growing up to the present time, and have attained a size such as few people expected to see; the result of all this is an unusually soft, tender, watery condition, highly susceptible of injury from frost, even if not more intense than usual. To resist this I should recommend amateurs to lose no time in preparing all the protecting materials they can command; what such is to consist of will vary according to different localities. Gorse, or Furze as by some better understood, is the best protector that can be provided for many plants; it is even better than Fern, as it does not get beaten down by the rain, but lies lighter. For beds of Chinese Roses, if branches of Gorse in a single layer be put close together so as to cover the ground well up to the collars of the plants, with the ends stuck sloping into the ground to prevent their blowing about, they will protect them in a way unequalled by any other covering which I ever tried. A few pieces in and round the heads of standard Roses, fastened by a couple of ties with twine, or a straw band, will secure them. In low, damp places in northern parts of the kingdom, where more than usual growth has been made, I should suggest not only standard Tea Roses but also Hybrid Perpetuals being treated in this way. Amateurs do not usually grow more than can be so protected. Amongst tender herbaceous plants Gorse is equally efficacious in warding off frost: it can be used fresh as soon as cut. In many places it can be procured merely for the labour of cutting. Something may also be said in the way of appearance, as the ground looks tidier covered with it than straw or litter. Fern is the next best material, as well as neat looking, if applied similarly to the Gorse. Sometimes the fallen leaves are recommended to be left on herbaceous beds, or a covering of these put on, but in a garden where there are any pretensions to order and a cleanly appearance they are intolerable, as every gust of wind drives them over the walks and lawns, which are thereby kept in a continual state of untidiness, unless there is as much Fern or litter over them as would suffice to protect the plants, in which case the presence of the leaves is unnecessary, for this covering of the ground on herbaceous borders must not be carried to too great an extent, or it will become an absolute evil, as during the winter quantities of plants now altogether below the surface will spring up, and if there be too great a depth of covering over them their shoots will become blanched and draw up weakly—3 in. in depth of material will be found sufficient. When neither Gorse nor Fern is available, stable litter is the next best to use, not being so unsightly as clean straw, and the manurial elements it contains will materially assist the plants in their future growth, as they are washed down into the soil by the rain. About 2 in. of spent tan is not a bad substitute, and, when the soil is of a heavy and retentive nature, will benefit it when dug in later on.

Pampas Grass.—This finest of all autumn-flowering plants will, in many parts of the kingdom, generally withstand our winters without protection, but when it is in a conspicuous position, its destruction or serious injury is such a loss that, except in favoured situations, it is better to protect it from injury. The method I have always found sufficient is to gather the leaves closely together in an upright position, and fasten them in their places with twine, then to surround the whole with 3 in. of clean straw laid on in the form of thatch, letting it come well down to the ground so as to protect the bottoms of the plants, securing the straw with twine and two or three stout stakes driven into the ground; if this be allowed to remain on until the beginning of March, the labour and material required are not much, and are well repaid by keeping safe such plants as this, which, if destroyed, takes several years to replace. Beds of Hyacinths will be benefited by covering with 2 in. of spent tan. Ornamental deciduous trees in conspicuous places that have been moved this autumn, and evergreens recently planted, should in all cases have old tan, Fern, or litter placed over their roots. Fruit trees and bushes lately moved should be treated in like manner.

Kitchen Garden.—Broccoli, Spinach, and early planted spring Cabbage will be much benefited during a hard frost, especially if accompanied by cutting winds, with an absence of snow on the ground, by laying Pea-sticks down betwixt the rows, and partially over the plants, but not so as to bruise the leaves. They should be put on when there is an appearance of frost, and should remain until it is passed. A thin scattering of Fern or stable litter over the Pea-sticks will still further protect the crop. Celery should also be covered with litter during the time that frost occurs, but it should not be put on before, or allowed to remain on after the frost has ceased, or it will cause the hearts to rot.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. DENNING.

Jan. 1.—Soiling and manuring border of second Peach-house. Pointing over herbaceous borders and the spaces among bush fruits. Sowing Carrots and Radishes under glass. Potting Odontoglossum crocidipterum and Mesospinidium vulcanicum in two-thirds Moss and one-third peat; also young Pelargoniums into their flowering pots, and another batch of Potatoes, and placing them in Peach-house. Basketing Stanhopeas and Acinetas. Putting in Vine eyes in one-light pit, and plunging them in fresh leaves. Putting Chrysanthemum cuttings, which were struck 28th January, in heat. Putting in another forcing of Strawberry plants; Mint and Tarragon. Examining East Indian Orchids for scale. Washing Stephanotis and Camellias. Syringing Azaleas for thrips, using 5 oz. of soft soap to a large potful of water. Top-dressing Cattleyas with peat. Emptying first two-light pit, and re-filling it with half leaves and half manure for Melons. Thinning plantations. Beginning to prick over Asparagus land. Buds bursting on Muscat Vines; temperature from 63° to 65° at night, 68° by day.

Jan. 2.—Digging shrubbery borders. Sowing Radishes, Cauliflowers, and Lettuce, in orchard-house; also some Syon House Cucumbers. Potting a few old Calceolarias to make large plants for conservatory. Putting in Calceolaria cuttings, struck 25th January, in heat; also Salvia patens for cuttings. Extra-covering Celery. Painting Peach-trees in third house. Filling up bins in potting shed with manure, leaf-soil, and loam. Putting a layer of ashes in cutting pit in which to plunge cutting pots. Making a pit ready in which to put Pelargoniums after potting. Beginning to prune bush fruits. Plants ready for house decoration:—Roman Hyacinths, Cyclamens, Heliotropes, Poinsettias, Primroses, Narcissi, Rhodoras, Mignonette, scarlet and scented-leaved Pelargoniums, Tulips, Lily of the Valley, Schizostylis, Primulas, Azaleas, Erica autumnalis, and Rhododendrons. Turning rubbish-heaps in order to get them decayed ready for use.

Jan. 3.—Putting in Fuchsia cuttings and plunging them in pit in heat. Getting Camellias and large winter Heaths up to conservatory. Making edges ready for turf wherever the latter has got worn or died away. Extra-covering seed Potatoes. Fumigating Phalænopsis and Dendrobium houses. Giving large Tree Mignonette a layer of manure as a top-dressing. Making a four-light bed for Carrots. Getting in twelve loads of cow manure for Roses. Top-dressing Cattleyas.

Jan. 4.—Putting in a few Petunia cuttings and plunging them in bottom-heat. Getting all plants of Achyranthes from conservatory put into heat for cuttings. Putting in cuttings of Crotons and plunging them in bottom-heat. Putting in another batch of Asparagus and taking out first crop. Hardening off first batch of Lilacs now in full flower. Covering Carrot frames well over with straw to try to get heat up.

Jan. 5.—Re-arranging all the Orchid-houses. Putting stock plants of scented Verbenas into heat for cutting. Planting some young Gooseberry trees; also a bed of Peppermint. Shifting Pelargoniums, placing them in pits, keeping them cool and dry, and giving them plenty of air. Putting Musk into heat, and Mignonette on the back shelf of a cold Vinery. Looking round Hollies and Conifers, and dashing a little gas-tar against them to keeping off rabbits. Winter Cucumber plants still looking well and bearing freely. Top-dressing second Vines with cow manure. Making a new Mushroom-bed. Cutting down autumn-struck Heliotropes, to induce them to break before potting them off. Pruning pillar Roses. Starting second Peach-house at 50° at night, and 55° by day, fire-heat.

Jan. 6.—Digging land for Onions. Sowing Parsley; also Sweet Peas by hedge side. Shifting Nemophilas into 6-in. pots. Potting Cattleya Skinneri in quite half small crocks mixed with fibry peat and charcoal. Cutting Alicante and Lady Downes Grapes. Putting in cuttings of Justicias, Chrysanthemums, and Heliotropes; also some White Currant cuttings. Putting Forget-me-nots in heat and keeping them at 50° at night; also Seakale, fifth crop of Asparagus, and fourth crop of Rhubarb. Giving Creepers in conservatory border a watering. Peach trees in fine bloom, putting a little front air on at 60°, and leaving one nick on at night, or at least till 9 o'clock. First crop of Strawberry plants showing flower-spikes, keeping them at 58° by night. Tying up frame Lettuces as required.

Greenhouses.

Damp will still be the principal enemy with which we shall have to contend for some time to come, and must be guarded against by a frequent use of gentle fires, accompanied at the same time by sufficient ventilation to keep the air in constant motion, means by which a healthy atmosphere will be secured. Now that most greenhouse plants readily admit of being handled without injury, the present is a favourable time to go over them to replace any decaying sticks or trees, and to carry out whatever training is requisite to get them into proper shape or to afford the necessary support. In doing this the stumps of any stakes that have been broken off should be carefully removed from the soil, for if left in to rot they are sure to generate fungus, and when this fastens itself on the roots of the plants, it immediately paralyses their growth and eventually destroys them altogether. To save puncturing the ball more than is absolutely necessary, the same holes should be made use of for inserting the fresh stakes, which ought to be made of the best Baltic deal, in order that they may be as enduring as possible. It is a common thing to see many more of these used than is really required for the proper support of the plant, and as the appearance of a forest of sticks in a pot is in the highest degree objectionable, independent of the great harm they do in mutilating the roots, the aim of cultivators should be to do with as few as they can. Azaleas, Cytisus, and similar compact-growing subjects, when once got into shape, may readily be kept in that condition by the use of a few ties running from branch to branch or out from the central stake or main stem to keep down any to furnish the bottom, and when managed in this way they always present a much better appearance than they do when a stiff, formal training is carried out, quite at variance with their natural habit. In overhauling the collection for the purpose of tying, &c., see that all are quite free from scale or other insect pests, and clear away any Moss or confervæ that may be growing on the soil that air may have free access to the roots, and so keep the ball in a sweet, healthy condition. The pots, too, generally get an accumulation of slimy matter on them at this season is owing to the damp state of the atmosphere, and this should be scrubbed off whenever it shows itself.

Stacking Soils.—One of the most important things connected with plant cultivation is that of having suitable soils always in a fit state ready to hand when wanted. Where a sufficient stock of peat and loam is not already laid by, the present is a good time to get in a supply while the herbage is short, and both are in a moderately moist condition for storing. In no case, however, should either of them be carted if at all wet and sodden, for if stacked in that state they would become compressed, sour, and unhealthy, and totally unfit for the purpose required. It is the practice with some cultivators to have the larger portion of their soil under cover, but when so placed it never acquires that degree of mellowness it does when fully exposed to the air and the sweetening influence of the atmosphere, both of which play such an important part in rendering soil in a fit condition for the supply of food to the roots of plants. The stacks are best in the open, made in the ridge form, about 3 ft. wide, more or less according to the bulk required, as then the interior is protected from wet without losing the benefit of the ameliorating effects of the weather. Such as is required for immediate future potting should, however, be got under cover at once, that it may be out of reach of frost and wet and in good order for use. Excepting Pelargoniums and Camellias, there are few plants that like either loam or peat in a green state, that is, before being stacked and seasoned; but where necessity compels their immediate use after carting, they may be much improved by subjecting them to a good baking, which will not only destroy all living fibre, but any insects or their eggs, and at once render the soil in a fertile condition.

Chrysanthemums that have been so useful in rendering the above structures gay for some time past will now have played their part in that respect for this season, and in order to secure strong healthy cuttings to start again, a plant of each variety should be selected and stored away under the protection of a frame, so as to be kept out of reach of severe frosts. Where large specimens of these are required they can scarcely be propagated too early, and as there will now be plenty of young shoots of sufficient length at the base of the old stems, the best of these should be taken off and inserted singly in small pots in sandy soil and placed under hand-lights or bell-glasses in a cold pit or frame where they can get plenty of light.

Pelargoniums of the show and fancy kinds required for early blooming should at once be gone over, and have any weak, misplaced shoots removed, and the stronger ones stopped and regulated, so as to admit to the under foliage all the light the present season affords. By getting the branches into position thus early the foundation of good symmetrical plants is at once laid, and the use of stakes, which are always so objectionable in appearance later on, may in a great measure be done without. A few ties, made with bass matting, and secured to a band of the same, run round just below the rim on the outside of the pot to draw down the shoots, are amply sufficient for all purposes of training, unless very evenly shaped plants are required, in which case it will be necessary by-and-by to resort to a free use of small, twiggy sticks of dried Willow or Hazel, so as to be as inconspicuous as possible. All plants of both kinds ought now to be enjoying light, airy positions, on shelves or stages close up to the glass, where with a temperature ranging from 45° to 55° they may be kept in perfect health and entirely free from spot, which is always such a scourge at this season, when atmospheric and other conditions are not favourable. Insufficient warmth and damp are sure to bring it about, and when once it makes its appearance much damage is soon done, unless immediate means be taken by affording proper ventilation, a dry, sweet air, and the requisite amount of heat. The fancy varieties will take and require more of this than the large-leaved kinds, and should therefore have the most favourable positions assigned them, as they are always the first to suffer either from damp or lowness of temperature. Plants of these are now almost at a standstill as regards growth; very careful watering will be requisite for some time to come, and until the days lengthen only just sufficient should be given to keep the ball moist. All the forcing kinds, of which alba multiflora is still one of the best, may now be pushed on in moderately dry heat where they can have plenty of light and air to keep them from drawing. As it is always desirable to have these in as small pots as possible, they should now be liberally assisted with liquid manure whenever they require water at the roots.

Azaleas.—Now that the stock of these will be drawn on from time to time for forcing, a close examination of the plants should be made to see that they are entirely free from thrips, otherwise when placed in heat these insect-pests soon get into a state of activity, and are not easily dislodged when the flower-buds get into a more advanced state without considerable risk of injury. Strong Tobacco-water, with an ounce or so of Fowler's Insecticide dissolved in each gallon of liquid, is the safest and best remedy, as from its potent nature it not only destroy the thrips, but their eggs likewise, which fumigation, however strongly applied, would not accomplish in the same satisfactory manner. By holding the heads of the plants over a tub or other vessel to catch the liquid, it may be syringed on with but little waste and be used for similar purposes again.

Humeas.—These are such general favourites for decorative purposes during the summer and autumn months that no pains should be spared to have them in good condition, for if devoid of healthy green foliage quite down the whole length of their stems, they lose much of their attractive appearance. To have them in as good form as it is possible to grow them, they must not be stinted for want of pot room, or receive a check in any way from this time till they get into bloom. The best way to treat them is to give them slight shifts frequently, using good, rich, fibry loam for the purpose, and this

treatment should be continued till they are placed in 12-in. or 15-in' pots, in less than which it is almost impossible to have fine healthy specimens, on account of their gross-feeding habit. In order to keep them gently growing, it will be necessary to afford them a uniform heat of from 45° to 50°, where they can be accommodated with plenty of atmospheric moisture and a light, airy position close up to the glass.

Carnations.—The present damp state of the atmosphere is very inimical to the delicate blossoms of these plants, which appear more susceptible of injury than most others, and unless they be placed in well-ventilated houses or pits, where the air can be kept in free circulation by means of a hot-water pipe or flue, it is almost impossible to preserve them from injury.

Flower Garden.

Operations in this department are in a great measure necessarily suspended, owing to the almost incessant rainfall which we have experienced, and which has shown all faulty or defective parts in the formation of walks in a most unmistakable manner. The principal point in reference to these is to get rid of surface-water, for unless this be carried away as it falls, a firm, sound path is quite out of the question, however good the gravel may be. Next to good, sound walks, nothing adds so much to the enjoyment of a garden at this season as well-kept greensward, and to have it in this desirable condition, the broom and roller must be in frequent requisition: the roller not only consolidates the turf, and makes it firm and agreeable to walk on, but it greatly improves the texture and quality of the Grass, so that mowing, when it becomes necessary, can be carried on with much less labour than it otherwise could be. Although we have had such mild weather up to the present time, flower gardeners should not allow themselves to be lulled into false security as regards the safety of any plants of doubtful hardiness that may yet remain without protection, for should we get frosts of even ordinary severity, they will have much more effect than is usual on account of the late growth made during the autumn, and the consequent succulent state most things are in, a condition that is anything but favourable to them passing the winter in safety; it is therefore advisable to afford the necessary protection at once, before frost does come and catch them in their present unprepared state, and to do this effectually, nothing answers the purpose so well as a few fresh fallen leaves, kept in position by a handful of Bracken and one or two branches of evergreen. Such plants as Magnolias, Ceanothus, and others on walls, can best be protected by tacking double mats in front of them; but as this can be done quickly, and as light and air are of importance, such work may be deferred till the approach of frost. The crowns of Hollyhocks, Phloxes, Pentstemons, and other choice border flowers should be afforded some slight shelter, such as a small mound of leaf-mould, which will carry them safely through, and encourage them to start with greatly increased vigour in the spring. A mulching of the same should likewise be afforded to borders of Belladonna Lilies, Alstrœmerias, Gladioli, Ixias, and any other bulbous-rooted plants that are at all liable to injury in severe weather.—J. Sheppard, *Woolverstone Park.*

Kitchen Garden.

All vacant plots of ground should be turned up as soon as possible to the ameliorating influences of the weather, and as seed-time is fast approaching some plan of cropping should at once be decided on, in the making out of which particular care should be taken that plants of the same species do not occupy the same piece of ground twice in succession, *i.e.*, supposing Broccoli, Cabbages, or any of the Kale tribe constituted the last crop, the following should be Parsnips, or Carrots, or any tap-rooted vegetable. A methodical system of rotation of crops should always be determined on, for it must be evident to the most casual observer that ground cropped even but twice consecutively with the same plant turns out at best but indifferently, unless the soil has, as it were, been thoroughly changed by deep trenching and manuring—the only alternatives where a strict rotation of crops cannot, from want of space, be at all times adhered to. I have noticed in the cottagers' gardens of this district how persistently they plant nothing but Potatoes, Beans, and Cabbage, the result being that the ground is thoroughly surfeited and the produce proportionately small compared with what can be had from ground where a greater variety of vegetation is grown. Unfortunately, too, the evil is so deeply rooted, that one despairs of ever inducing them to have faith in any other vegetables but those named. Let us hope, however, that Mr. Hobday may be able to improve matters in this respect. Asparagus plantations that have not yet been dressed should, on the first frosty morning, have a thick coating of manure, and if over this a surfacing of soil, if ever so slight, be put, it will prove beneficial. The bed system of growing Asparagus is much to be reprobated; what can induce people to scoop out such immense alleys between the beds and expose half the roots to the atmosphere, I am at a loss to understand, and can only attribute it to custom and the lack of moral courage to ask themselves the why and wherefore they perform an operation in a certain customary fashion when but a moment's independent thought would frequently suggest a better plan. If those who have faith in what I call the ridge system would but once try to grow Asparagus on the level in lines of from 2 ft. to 3 ft. apart, and dress with soil or manure annually, I think they would soon give up the old practice. Celery should have been finally earthed up ere this, and protection in the shape of long stable litter or Bracken should be at hand in case of severe frost, as the excessive rainfall will have rendered it more than usually susceptible of injury. A portion also should be dug up with good balls adhering to it, and be placed in cool sheds ready for use when the ground is too hard to dig it from open quarters, and such a remark is also applicable to Parsnips and Carrots, if not yet housed. In open weather sow Peas on a warm border, also Broad Beans, and in a similar position a good batch of early Potatoes should now be planted, the sets having been previously prepared as recommended some time ago, viz., in shallow boxes of light soil or leaf-mould, and, previous to planting, all but a couple of sprouts should be rubbed off them. The proper preparation of Potato sets has more to do with the after success of the crop than many imagine, and too much pains cannot well be taken with them. One of the most promising new early round Potatoes that has come under my notice is Fenn's Early Market. I grew a quantity of it last season, and am able to pronounce it first-rate in every respect, and it will doubtless become a standard early sort. When through wet or other causes it is impracticable to work on the ground, labour should be concentrated on the formation of hot-beds for raising various seeds, striking cuttings, planting Potatoes, Asparagus forcing, and also on which to sow Currants, Radishes, and Lettuces; also clean out sheds and ice-houses; point Pea-sticks and Bean-rods, such forethought being really necessary in order to keep pace with the work in the busy season.—W. Wildsmith, *Heckfield.*

Boxwood and its Uses.—Not every one is aware that the wood used by engravers is the growth of those far-away regions around the Black and Caspian Seas, the very names of the ports from which it is shipped being unfamiliar. For all fine engraving Turkey Boxwood is used, and as its quality varies much, some skill is necessary to a good selection. The best is of a delicate, yellow colour, clear and free from spots; it cuts smoothly and evenly, with no crumbling or tearing, but every line cut will be perfect. It is to the use of this wood by artists that the superiority of their designs and wood engravings must in a great measure be attributed. In consequence of its scarcity and high price, many substitutes have been resorted to; Maple, Apple, Pear, Mahogany, have been experimented upon; but hitherto no wood, metal, or composition has been discovered that possesses the requisite qualities. In addition to engraving, Boxwood is used for scales, rules, gauging rods, and similar articles of which figuring is made. Any one that has ever held a carpenter's rule in his hand knows what Boxwood is like. It differs in colour from all other woods, and it is somewhat remarkable that it comes to perfection only in a comparatively limited region of country in the vicinity of the Black Sea. It weighs about 75 lb. to the cubic foot, and is very expensive.—Q.

Dwarf Shrubs for Edgings.—Will you kindly give me a list of dwarf shrubs, &c., for permanently furnishing the margins of beds and masses of shrubs? I should like them dwarf and neat in habit. —J.D. [The following list will be found to answer your purpose:—

Arctostaphylos Uva Ursi	Gaultheria procumbens	Menziesia in variety
Azalea amœna	,, Shallon	Pernettya in variety
Bryanthus erectus	Genista anglica	Polygala Chamæbuxus
Calluna vulgaris in var.	,, hispanica	Rhododendron, dwarf kinds
Cornus canadensis	,, sagittalis	Santolina Chamæcyparissus
Cotoneaster thymifolia	Helianthemums, many kinds	,, viridis
Daphne Cneorum	Hypericum calycinum	,, incana
,, collina	Ivies in great variety	Skimmia japonica
,, ,, Fioniana	Juniperus squamata	,, laureola
Empetrum nigrum	,, tamariscifolia	,, oblata
,, rubrum	Kalmia nana	Vaccinium in variety
Epigæa repens	Ledum buxifolium	Vinca in variety.]
Erica in variety	,, thymifolium	
Euonymus japonicus fol. in variety		

Soot Water for Plants.—This is extensively used in many plant-growing establishments round London for Pelargoniums, Fuchsias, and similar plants. It is applied strong or weak, according as the plants are vigorous or the reverse. It has the effect of dispelling all worms from the soil, and of imparting a deep green, healthy colour to the foliage.—K.

THE SPEEDWELLS.

The genus, technically known as Veronica, embraces a number of species, many of which are familiar to cultivators, but many others—whose beauty and value as desirable occupants of the herbaceous border and rockery—have still to be more generally known and appreciated than they now are. The patron saint (St. Veronica, in compliment to whom the genus was named) I think we may rightly conclude must have been blue-eyed, that being the predominent colour in the genus; be the colour what it may, however, we would at the outset correct a very popular error as regards the pronunciation of the name, the emphasis, which is usually laid upon the ante-penultimate or on the *o*, ought to be on the *i*; thus the saint's name is Veronica, whereas in ordinary horticultural parlance, the generic pronunciation is Verónica. Of the two the latter, however, sounds to our accustomed ears the more euphonious, and possibly it will be long before its saintly origin becomes in this respect generally recognized, the more so as in the pronunciation of proper names a certain amount of latitude is allowed, or perhaps I ought to say if not really allowed is tolerably freely taken. If there be in this genus a diversity of opinion as regards pronunciation, there is amongst botanists a still greater diversity as to the number of species which it embraces, and as to what should constitute the basis of a true distinctive character between those species. Some are disposed to look upon many of the so-called species as mere variations, and do not hesitate to group some half-dozen moderately-distinct forms under one specific title. In some instances I admit this may be done with advantage, but in others it must be evident to those who practically study the character of the plants as indicating certain peculiarities of habit and growth in contra-distinction to those who deal with them merely as the fragmentary occupants of a herbarium, the advantages are somewhat dubious. I say, and I speak from some little experience, that at times the sweeping away of plants that have a fair claim to specific identity is of a character that partakes more of freedom than discretion. These remarks apply to other genera besides the one of which I now purpose to give an analysis.

I have already said that the genus Veronica is a large one; it consists of some two hundred species or more, and that being the case, it will be necessary to group them into sections, and it is my intention only to select for that purpose such species as are in cultivation and possess well-defined, distinctive features. Veronicas naturally divide themselves into two sections—one consisting of trailing annual plants, with which we are more familiar under the title of weeds, and the other of perennial and even shrubby plants. Our concern will be chiefly with the latter, a section which may be further sub-divided into groups, viz., the Alpine group, consisting of dwarf procumbent plants, whose leaves are usually smooth and entire; the Chamædrys group, also procumbent, the leaves being hairy and more or less notched, and the flowers produced freely on spikes arising from the axils of the leaves; the Spicate group, including all those in which the flowers are arranged in long terminal spikes, the habit of growth being upright, and the majority of the plants attaining considerable stature; the Shrubby group, as the name indicates, includes all those that assume a frutescent or arborescent form, a peculiarity that appears to be chiefly confined to those that are natives of Australia, Van Dieman's Land, New Zealand, and the Falkland Islands. We have thus, including the annual section and depriving it of its primary sectional distinction, five groups for consideration. An interesting fact relating to Veronicas is, that, numerous as are the species, not a single representative is met with indigenous to either North or South America. No doubt, however, many of the annual forms will by this time have made themselves a home in the Western World, but they owe their existence there to man. One closely-allied plant grows in Virginia, which, by a trifling structural distinction, is referred to the genus Leptandra, a genus possessing all the outward aspect of a Speedwell, and possibly owing its generic distinction to its peculiarly isolated position in the New World. So close, however, is its relationship considered by most people who have any knowledge of either botany or horticulture, that I purpose giving it a place, which it well deserves, in my enumeration.

The Annual Section.

Though I have classified this section under the uninviting general denomination of weeds, we have amongst them two species that are of sufficient beauty to render them desirable for garden culture.

Buxbaum's Speedwell (V. Buxbaumi).—This has now become much more frequently met with in our corn-fields than it used to be. In olden times it was considered a rare British plant. I suspect it owes its more general distribution to its introduction along with agricultural seeds from the Continent. It is a trailing, somewhat hairy plant, producing its blossoms singly from the axil of the leaves. The flowers are large, about the size of the Wood Germander, and of an equally clear azure blue; they are amongst the very earliest of the field flowers, blooming freely in February and March. Under garden culture as a thoroughly hardy annual it forms large patches, and acquires its full beauty long before the Wood or Mountain Forget-me-nots have opened a blossom. Moreover, so treated it continues to blossom for a long time.

Syrian Speedwell (V. syriaca).—This is an exceedingly diminutive plant, of dense, compact growth, scarcely exceeding 3 in. in height, and wonderfully floriferous; it makes a neat plant for a rockery in spite of its annual duration, as it seeds freely and soon finds a home amongst the chinks and crevices, where, if it assumes under such conditions a diminution of its already limited stature, it loses nothing of its intrinsic beauty. It was introduced from the East some dozen or more years ago, but owing to the fact that it was usually allowed to bloom in the seed-pots in which it was sown, it had but scant justice done to it, and but rarely had it an opportunity of establishing itself and manifesting fairly and fully the beauty with which Nature had endowed it.

Alpine Section.

In this, and also in the succeeding groups, I shall commence with the dwarfest representatives and finish with the tallest, rather than allocate them according to their botanical affinities.

Milk-white Speedwell (V. lactea, syn. V. repens) is so dwarf that it may be reckoned rather by parts of inches than by inches. It forms masses of creeping stems, covered with small, broadly ovate leaves that lie flat on the surface of the ground; from the upper portion of each of the myriad shoots are produced several milk-white flowers, which in the aggregate appear when in blossom to hide the whole of the foliage, and give the entire plant the appearance as though a pail of milk had been capsized over it; where the soil is damp, with at the same time a fair exposure to the sun, it forms an admirable substitute for Grass, and makes a suitable covering for the small walks that intersect a rock garden, where it appears to grow all the more vigorously by being trodden upon. It is a native of Corsica and the Balearic Islands, and perfectly hardy.

Alpine Speedwell (V. alpina) is of somewhat larger growth than the preceding, the branches less densely arranged, and the flowers more numerous as regards the individual corymbose heads, but far less abundant as regards the entire plant; the leaves are broadly ovate and acute, smooth, light green in colour, the flowering ends of the shoots rising some 3 in. or less above the surface of the ground, terminated by groups of small-sized blue flowers, whose stems, bracts, and calyxes are covered with short hairs; the erect character which the flowering portion of the otherwise procumbent stem assumes is one of the most distinctive features of the Alpine Speedwell. As a native of Britain it is confined to a limited range at high altitudes on the Scotch mountains, and has not, we believe, yet been found in England.

Money-wort Speedwell (V. Nummularia).—The specific title here is not one of the happiest, as the leaves are so small and distinctly outlined, that it is almost a wonder Gouan did not give it the much more appropriate name of V. microphylla. So lovely is the plant itself that it scarcely matters what its name is. It is of twiggy procumbent growth, the stems being furnished with a densely decussate arrangement of small, round, and slightly-pointed leaves, and in the months of June and July each small branchlet is terminated by a short, corymbose, small head of deep blue flowers, whose brilliancy is much enhanced by the bright orange colour of the anthers; it is essentially a rock plant, and loves to be firmly wedged in amongst the stones, where its wiry roots will receive a constant and free drainage. It is a native of high districts on the Pyrenees, where it forms a most attractive feature of the Alpine flora, immediately subtending the snow-line. With me it rarely seeds, nor indeed do its procumbent stems root at all freely into the ground, but the tips of the young growing shoots in early spring will root readily in silver sand, and all the more rapidly if they can be placed in a frame where

there is a gentle bottom-heat; under these conditions they will make well-established plants before autumn.

Rock Speedwell (V. saxatilis) is a compact-growing, semi-shrubby plant with spreading stems, rooting more freely at the points where they touch the surface of the ground than the preceding species; the leaves also are larger, broadly elliptical, of a shining deep green, arranged on the stems so as to overlap one another; the flowers are large, of a deep intense blue, arranged in corymbs that spring from the axils of the terminal leaves, rarely exceeding four or five in number; they are produced in June and July. It is a native of the highest mountains in Scotland, and is quite amenable to ordinary cultivation in our lowland districts as well. It is very impatient of damp during the winter season, which not unfrequently rots off its evergreen branchlets, and though it may come freely from the base of the old stems, the chance of bloom for that season is completely destroyed.

V. SAXATILIS var. LOUDONI is distinguished from the preceding by its more diminutive foliage and dwarfer habit; the flowers also are slightly smaller in size; it has no doubt originated as a seedling variation.

V. SAXATILIS var. GUTHRIEANA is a more vigorous grower than the normal type—has its leaves longer, narrower, and less dense in their arrangement; the flowers also are larger, and, in addition to the bright blue colour, have the upper petals suffused with a tinge of deep plum red that has a wonderfully pretty effect. They are produced in greater numbers, and on the whole the plant is more vigorous, thriving well, and making handsome patches alike in the ordinary herbaceous border as in the rockery. It is, I suspect, a hybrid between V. saxatilis and V. fruticulosa.

Shrubby Speedwell (V. fruticulosa).—A dwarf-branching plant of slightly woody habit, with sparsely arranged coriaceous elliptic-lanceolate leaves, the principal branches elongated into a spicate inflorescence covered with glandular hairs. The flowers, which are produced in July are flesh-coloured, and are usually succeeded in the autumn by a few smaller spikes from the lateral branches; it seeds freely, and may be readily increased in this way, as also by division—it is recorded as occurring in one or two localities in Scotland, but must be looked upon as a doubtful native; it, however, occurs abundantly on the Alps, the Pyrenees, and in Corsica.

Daisy-like Speedwell (V. bellidioides) is a close relation to the foregoing species, differing chiefly in its radical leaves being arranged in somewhat dense rosettes, and also in their more obovate shape. The flowers are flesh-coloured, arranged in shorter spikes, and the hairs are devoid of the glandular character; there is also a more important technical distinction than any of the above in the shape of the fruit, which in the former is sub-rotund and obtuse, and in the latter emarginate. It is a native of the Alps, the Pyrenees, as also the mountain ranges in Bohemia and Silesia.

Leafless-stemmed Speedwell (V. aphylla) is a dense, tufty-growing plant of very diminutive stature. The leaves are broadly-obovate, slightly hairy, and arranged closely on the surface of the ground. The flowers are small, of a slaty-blue colour, arranged in groups of three or four at the summit of a slender stalk that attains a height of about 3 in. Though not remarkably showy, it is an interesting and very distinct species; it occurs at high altitudes on the Alps, the Apennines, and the Pyrenees.

Snowy Speedwell (V. glacialis) is a species closely allied to the foregoing, of which possibly it may be but a mere variation; with me it is rather a stronger grower. The leaves are more fleshy in consistency and furnished with scattered, rigid ciliæ along the margins. I do not find any record of this species in the descriptive catalogues to which I have access; but doubtless, as its name indicates, it occurs just below the snow-line on our European mountains.

Medicinal Speedwell (V. officinalis).—A procumbent creeping plant, with broadly ovate leaves, sometimes hairy, at others almost glabrous. The flower-spikes rise 3 in. or 4 in. above the procumbent mass, and are of greyish-blue colour, not very striking; but though the plant is common—and when mixed up, as it usually is, with Grass it has not a very effective appearance—yet when established on a rocky ledge and sending its little serpent-like shoots in all directions, and the whole in the month of May and June suffused with a cloud of greyish-blue blossoms, it is not to be despised. V. officinalis rubra is dwarfer and more compact, and, as the name indicates, its flowers are of a rosy-red colour. This variety is decidedly superior to the parent species as regards beauty.

Allioni's Speedwell (V. Allionii).—Of similar procumbent habit to the former, but with larger and more rotund leaves, notched at the edges, and smooth and shining as to the surface; though claiming close relationship it is decidedly distinct. The flowers are pale blue, arranged in short spikes. It is a native of the mountain districts in Savoy and Dauphiny, also in the Pyrenees. I have noticed that slugs have a peculiar affection for this species.

Daubney's Speedwell (V. Daubneyi).—This is a stronger grower than any of the preceding; its leaves are fully 1 in. long by half that in width; they are sessile-obovate, blunt-pointed, and regularly crenately notched, the whole plant is perfectly glabrous; the leaves of good leathery substance and bright shiny surface. The flowers are produced in July and August on spikes fully 6 in. long or more; they are of a charmingly delicate rose colour, and the plant both in habit of growth and blossom is a very desirable rock plant; not seen in cultivation so frequently as it should be. Of its history I know very little, although I have cultivated it for years. I believe it originally came amongst seeds from Genoa, but I have never seen it authenticated or described.

Brook Speedwell (V. Beccabunga), popularly known as Brooklime, a plant frequently met with in the watercourses along the roadsides, its stems trailing for a considerable distance, sparsely clothed with elliptical, smooth, green leaves, the points of the secondary branches producing from the axil of each of the opposite leaves short spikes of intense blue flowers throughout May and June. The whole plant is smooth and fleshy, and its leaves covered with a greasy exudation. Though its natural habitat is in shallow water, it thrives well in any damp locality, where it assumes a more compact habit of growth. There is a white variety which I once met with wild; the flowers being of remarkable purity, rendered it valuable for cultivation, but I lost it many years ago.

The Chamædrys Group,

although containing some very dwarf procumbent plants, is characterized by a greater freedom and vigour of growth than those of the last section, excepting, perhaps, the last described species. The plants are usually hairy, and the leaves distinctly notched, and in some instances much divided; the flower-spikes are produced freely from the axils of the lower leaves, and the stems, after flowering, make a vigorous growth, which, in the case of the trailing species, becomes persistent, but in the erect ones usually dies away in the autumn.

Notched-leaved Speedwell (V. pectinata) is a numerously branching, trailing plant with broadly-ovate, deeply and roundly notched leaves, which, as well as the stem, are covered with hairs to that extent as to give the whole plant a greyish appearance. The flowers are produced on very short axillary spikes, and are of a lovely azure blue colour, harmonizing beautifully with the greyish tint of the entire plant. It is a very distinct and charming plant, perfectly hardy, and admirably adapted for rock culture. Dryness, however, during the winter months is absolutely essential, or else it is liable to rot away. It is a native of the mountains in Greece, and also, we believe, of Sicily. It roots tolerably freely from the procumbent stems, and by this means may readily be increased.

Taurian Speedwell (V. taurica) has slender trailing stems covered with narrow, almost linear, dark green leaves, slightly recurved at their margins; the flowers are of an intense deep blue, arranged in spikes of considerable length as compared with the growth of the plant, which is anything but vigorous. They are produced in May and June. It rarely matures its seeds, but may be propagated by means of the early spring growths, which strike freely. It is a native of Tauria, and also of Siberia.

Prostrate Speedwell (V. prostrata).—This is, I believe, the true name for the species long cultivated under the name of V rupestris, of which we have several varieties. The typical plant is, as the specific title very properly indicates, of procumbent growth; its trailing stems are covered with numerous lanceolate leaves, serrated as to their margin, and pubescent; the spikes are lateral, about 4 in. long, bearing numerous dark blue flowers besides the main bloom, which is produced in May and June. There is generally a second series of flowers in September, which, though much more limited in number, are none the less lovely. It enjoys a wide distribution throughout France, Germany, and Italy.

V. PROSTRATA var. MAJOR is larger in all its parts, and if anything a more abundant bloomer.

V. PROSTRATA var. PULCHELLA, usually dignified by a distinct specific title, has narrower leaves with scarcely any serratures, and covered with a shorter and more dense pubescence; its flowers are of a lighter blue. The true species described as V. pulchella is an annual, and I think I am not wrong in referring this plant to a variation of h e Prostrate Speedwell.

Savory-leaved Speedwell (V. saturejæfolia).—This plant is usually considered as a variety of V. prostrata, but while admitting its close relationship thereto, I feel disposed to recognise it as a distinct species, and without exception the loveliest of the whole genus. The leaves on the lower part of the stem are deeply serrated, almost pinnatifid, all deflexed or bent downwards; those on the upper part are linear with margins perfectly entire. The flowers are arranged in spikes full 6 in. or 8 in. long, rising from the axils of the lower leaves; they are twice the size of even the major form of V. prostrata, and are of an intensely deep clear blue internally and a soft lavender colour externally. It is a native of the Italian and Swiss Alps.

Vervain Speedwell (V. verbenacea).—This may possibly be looked upon as only another variation of the previous species, but it appears to me to have sufficiently distinctive characters as to give it a good claim to specific rank. Along with a similarly procumbent habit, we have here broadly ovate leaves, more deeply serrated, arranged in a very regularly decussate manner, albeit owing to the horizontal growth the decussation assumes a somewhat novel character, but this regularity of leaf-disposal renders the plant at once distinguishable. The flowers are of a lavender-blue colour, and are arranged on shorter spikes than any of the preceding. It is exceedingly floriferous, and forms beautiful patches along the front rank of the herbaceous border or on the rockery, where its height will not exceed 6 in. or 8 in. It blossoms in June, and is, I believe, a native of the south of France.

Germander Speedwell (V. Chamædrys), whose intensely lovely blue flowers gladden our sunny banks in the month of May, possesses an intrinsic beauty, such as must be admitted to militate sadly against the truth of the old proverb, known to us in our school-boy days—that "familiarity breeds contempt." No woodland rambler in spring and early summer can have failed to notice those overhanging patches of the Germander Speedwell, whose flowers appear individually to have absorbed, as it were, a whole expanse of blue Italian sky; and as soft and ethereal is it returned as a votive offering to his admiring gaze. To enter into a descriptive detail of such a familiar plant will, I deem it, be quite unnecessary; I would merely state, that as a border plant it loses none of its beauty by being removed from its sylvan surroundings, and ought to find a place more frequently than it does on a sunny slope of the garden. There is a variegated variety in cultivation, but with me its variegation disappears soon after it is planted out; the variegation is, however, under the most favourable circumstances, none of the brightest, and I must say I prefer the soft harmony which exists between the greyish natural colour of the foliage and the azure-blue flowers to any decided contrast between the two primary colours as would be presented by a well-defined variegated foliage.

There is also a variety, seeds of which were sent out this spring by Mr. Thompson, of Ipswich, under the title of V. Chamædrys var. pedunculata; this, we believe, will prove the true V. pedunculata of Bieberstein, and certainly a distinct species, as its aspect and habit even in a young state amply testify.

Circœa-like Speedwell (V. circœoides) is a lax-growing species, producing a few scattered trailing stems, with leaves wide apart, the lower ones deeply notched, the upper ones linear; the flowers are arranged in lateral spikes, and are of a light lavender-tinged blue. It is a native of Switzerland.

Divided-leaved Speedwell (V. multifida).—The plant now cultivated under this name is of a semi-erect character, attaining a height of from 9 in. to 12 in. The leaves are sessile, deeply divided, the lower lobes having a tendency to a further sub-division; they are generally arranged in threes along the stems. The flowers are of a palish blue colour, occurring in spikes, which originate on the early spring growth, and become, before the seeds are perfectly matured, almost smothered with the continued development of branches and leaves. I have a strong suspicion that this is the true V. austriaca of Willdenow, and that a trailing plant with very finely-cut leaves, and of somewhat delicate constitution, is the true multifida. I have not grown it, or, indeed, seen it for nearly twenty-five years; possibly our old veteran friend Mr. Leeds may know something of it, as, if I mistake not, the original plant to which I allude came from him. Should any of my readers have a plant answering this brief description, I should be glad of a specimen.

Pona's Speedwell (V. Ponæ).—A very distinct species, with simple, erect stems. Leaves sessile, broadly ovate, cordate, and regularly dentate at the margin; the secondary veins are deep sunken and the colour of the foliage light green. The flowers are arranged in short racemes that rise from the axils of the uppermost leaves; they are of a bluish-pink colour, each being elevated on a distinct pedicel. The whole plant is hard in texture and devoid of hairs except as regards the calyx. It is a native of the Pyrenees, and also of Mount Baldo.

Germander-leaved Speedwell (V. Teucrium).—A many-branched, nearly erect-habited, plant. The leaves are sessile, slightly cordate, ovate, and acuminate, margined with deep well-defined serratures, and blunt-pointed. The general contour, which gives an important character to the plant, consists in their being regularly decussate, deflexed, and incurved as to their margins. The flowers are of a bright blue colour, arranged on lateral spikes fully 9 in. long. It blooms in July and August, and is a native of Central and Southern Europe; it is a free-growing, compact, border plant, and may readily be increased by the division of its tufty root-stalks.

Broad-leaved Speedwell (V. latifolia).—An erect, vigorous-growing plant, with broad, sessile, cordate, rugose leaves, somewhat undulate or twisted, and bluntly toothed as to the margins. The flowers are of a deep, rich, blue colour, arranged in compact spikes that originate in the axils of the terminal leaves of each stem. In stature it attains a height of 1½ ft. to 2 ft., and flowers in July; it is a free grower in any ordinary garden soil, and may readily be increased by division of the root. It is a native of Central Europe.

V. LATIFOLIA var. AMETHYSTINA is dwarfer and more compact in growth, and the leaves somewhat narrower; it is sometimes recognised as a distinct species, and as such would take its position intermediate between V. Teucrium and V. latifolia. I, however, think it better to consider it as a mere variation of the latter.

The Spicate Group.

Under this heading let us allocate all those species in which the flowers are arranged in erect, terminal spikes, sometimes simple, sometimes branching. Moreover, the fruit is, with the exception of the first two species, globose, not flattened, as in the previous section.

Pale-flowered Speedwell (V. pallida) is very closely related to the foregoing species, differing chiefly in its longer and narrower

Pale-flowered Speedwell (Veronica pallida).

leaves, more compact growth, and dwarfer flower-spikes, whose height does not exceed 12 in. The flowers are pale blue, very similar to the last. It is a native of Tauria, and by no means as frequently met with in cultivation as V. gentianoides. Flowers in May and June. In both these species, as I have before said, the capsule is flat, not globose.

Gentian-leaved Speedwell (V. gentianoides).—A plant long familiar in gardens. The radical leaves, sessile and almost connate, broadly-ovate, entire and perfectly smooth as to the margins, surface both above and below smooth and shining, reminding one considerably of Gentiana cruciata. The flowers are arranged on simple erect spikes which attain a height of 18 in. to 2 ft. These spikes are clothed with gradually-narrowing lanceolate leaves. The flowers are light blue, produced in the month of May. It is a native of Armenia and Cappadocia. The variegated form is very pretty during winter and early spring, and when its constancy can be depended upon, which is not the case here, it would make a very effective margin for winter and spring flower-beds, and by the early removal of the flower-buds might retain a fair amount of beauty throughout the summer.

Spike-flowered Speedwell (V. spicata).—A name which stands sponsor for a host of species in ordinary garden parlance, but which correctly applied belongs to but one exceedingly distinct and readily recognized plant. Frequently as the name occurs in catalogues, it is the exception to find it applied to the correct plant. The true V. spicata is an exceedingly slender-growing plant, whose flower-spikes

are usually simple, and rarely exceed 12 in. in height. Its radical growth consists of numerous small lanceolate leaves, crenate as to their margin, and clothed with hairs, which form a complete covering to the ground, the blade of the leaf running down the footstalk in a spathulate manner; from this leafy surface rise the simple slender spikes almost devoid of foliage, on the upper half of which the blue flowers are densely arranged. It is an exceedingly elegant plant, and one that can never be mistaken. It flowers in the autumn, and is a native of Britain, but of rare occurrence. Its variety, V. spicata corymbosa, differs only in the fact that from the base of the spicate inflorescence a series of branches arise, forming a dense tuft, which when fully developed gives the inflorescence a distinctly corymbose character.

Hybrid Speedwell (V. hybrida) differs from the preceding in its more vigorous growth as regards the whole development of the plant and the large size of the radical leaves, which assume a broadly ovate and slightly cordate character. It used to be considered as a native of this country, but is now referred to Southern and Western Europe. It appears to be identical with V. nitida, another species in cultivation, with wonderfully variable proclivities. Under whichever name it is retained, it certainly has no tendency to revert from its normal type to that of the V. spicata, from which it is considered to be of hybrid origin.

Woolly Speedwell (V. incana, syn. V. candida) is a plant of similar stature to the preceding, but readily distinguished by its white leaves, densely covered with an adpressed tomentum; they are broadly ovate. This plant is occasionally used for the silvery margins of flower beds, for which purpose, when denuded of its flowers, it has a moderate value. The flowers are produced in spikes, more or less branching, of a bright blue colour, in the months of July and August. It is a native of Russia, abounding in Ucrania, where it assumes very variable characters, but always retains its distinctive one as regards the whiteness of its foliage.

Cut-leaved Speedwell (V. incisa) is perhaps the most elegant and charming of all this section. Its habit is distinctly erect; the radical leaves few in number, but those on the stem divided into slender, linear segments, the lower ones being twice divided, and all reflexed in an exceedingly graceful manner; the flower-stems rise to a height of 15 in. or 18 in., terminated by a more or less simple spike of pinky-blue flowers, whose beauty is beyond measure enhanced by contrast with the two protruding anthers, which are of a deep orange, these poised on delicate filaments appear scarcely to form part of the flower; it blooms in July and August, and is a native of Siberia. Owing to the fact that it does not seed, and increases very slowly indeed at the root, it has never taken its true position in general cultivation, such as its intrinsic beauty and elegance would entitle it to do. It however grows freely from cuttings made from the spring shoots when they have attained a height of about 2 in., at which time the removal of a few of the secondary shoots will generally tend to strengthen the old plant, and cause it to bloom more strongly.

Crisp-leaved Speedwell (V. crispa), though differing in appearance altogether from the preceding, this species has this in common, that it scarcely develops any radical leaves whatever, the stems rising erect to a height of 15 in., more or less, sparsely but regularly clothed with sessile, almost rotund leaves, somewhat cucullate in shape and crimped at the margins, the surface being shiny, and of a deep green colour, each stem being terminated by a spike of small dark blue flowers, smaller as regards the size of the individual blooms than any species in this section; it flowers in July, and is, I believe, a native of Hungary and Roumania. Like the last species it does not seed, and produces its surculose, underground stems in so very scant a manner that division of the root is always attended with risk, hence propagation should be, as in the last species, effected from the spring shoots, always observing to retain the most vigorous for the summer's bloom.

Leafy Speedwell (V. foliosa).—This plant is more generally known in gardens under the title of V. amœna, under which it was originally sent out some few years ago, but seeing that the true V. amœna is a very dwarf, annual species with red flowers, it is clear at a glance that such a title must be a misnomer. It is, however, a very distinct and pretty species. The radical leaves are broadly ovate, blunt-pointed, almost entire, or with very slightly notched margins, smooth on the surfaces both above and below. The leaves on the flowering stems retain all these peculiarities, only diminishing in size upwards. The terminal spikes are short, usually branching, and densely covered with bright blue flowers. It is a native of Hungary, and blooms in August, ripening seeds freely, and retaining in its seedling progeny with marked persistence the normal characters of the species.

Thick-leaved Speedwell (V. crassifolia).—This is a fine robust species with broadly ovate, smooth, leathery, almost cordate leaves, sharply serrated as to the margins, the lower ones supported on longish petioles, the stems foliaceous, and the flower-spikes attaining a height of about 2 ft., each main spike having two or three secondary ones attached to it. A native of the Caucasus, blooming in September and October, when its bright blue flowers have a lively and effective appearance.

Corymbose Speedwell (V. corymbosa).—The radical leaves broadly ovate and cordate, supported on long petioles, the margins irregularly dentate, covered with a short pubescence; those of the stem opposite and narrower, but still retaining the jagged outline; all

Corymbose Speedwell (Veronica corymbosa).

are petiolate, those on the lower part of the stem more so than those above; each stem is terminated with a simple spike, which midway throws out a cluster of branches, whence its corymbose title originates, as also the other name under which it is known, viz., V. polystachya. It blooms in September and October, and is a very showy border plant; it is a native of Southern Europe. In order to retain its true corymbose character it ought to be increased by cuttings, as this peculiar variation is not reproduced in the seedlings.

Sea-side Speedwell (V. maritima) is one that appears to be subject to much diversity of growth; it is frequently met with under the title of V. spicata, It has broad, smooth, irregularly-serrated, radical leaves, each supported on short petioles, those of the stem being few in number and sessile. The flowers are either blue or white, arranged in a laxly-branching spike, or more correctly, series of spikes, which scarcely exceed 18 in. in height. It is a native of Sweden, and though occurring at the sea-shore, is by no means peculiar thereto, as it is frequently met with inland and high above the water-level. There is a very pretty variegated variety of the species in cultivation.

Orchis-like Speedwell (V. orchidea).—Leaves long, lanceolate, crenately-serrated, the primary veins deeply indented. The corolla, almost divided to the base into five linear segments, is of a light

Orchis-like Speedwell (Veronica orchidea).

violet colour; the specific name hinges possibly more on the fact that the stamens are usually devoid of filaments, and appear to realize those Bollinia or pollen-masses that are peculiarly characteristic of the Orchidaceous plants. It is a native of the Caucasus and the Carpathian Mountains.

Spurious Speedwell (V. spuria) is a many-branched and abundant-flowering plant, limited as to its radical growth. The leaves

are ovate-lanceolate and irregularly serrated, the lower distinctly petiolate, the upper sessile. One distinctive character of this species is that the foliaceous stems branch almost from the base, each primary stem, as it were, being replaced by a series of secondary stems, which collectively form in a well-established plant a mass of flower-stems attaining a height of about 2 ft., and fully 2 ft. in diameter. It blooms in July and August, and is a native of Tauria, Thuringia, and Western Siberia. Besides the blue form, which is the true type of the plant, there is a white variety not unfrequently met with; and under the title of V. spuria rosea, we have a pink or flesh-coloured form of great beauty, that occasionally receives the dignified character of a species under the title of V. rubicunda; but it is so similar in habit to the V. spuria that I think there can be no doubt but that it is a mere variation in respect of colour; in this I am the more confirmed in the fact that seedlings of the so-called V. rubicunda have proved to be identical in every respect with the original species.

V. spuria var. elegans is much more slender and taller in growth than the normal species, and is recognised by some authors as specifically distinct.

Lofty-growing Speedwells (V. excelsa, V. prœalta, and V. eminens).—These are all lofty-growing Speedwells, as the specific titles would at once indicate. They vary chiefly as regards their

Lofty-growing Speedwell (Veronica prœalta).

radical leaves, which are, in the middle variety, longer stalked and more sharply serrate, as well as broader, than in either of the other species. In this instance the branching condition of the panicle is more constant. They are all late-autumn bloomers, and attain a height of 4 ft. or 5 ft., the branching flower-spikes retaining their full vigour till late in the autumn. They are said to be natives of Southern Germany, and grow freely in any good garden soil. As I have before said, although these are sufficiently distinct in the lower foliage, and each one possesses some especial peculiarity of growth, when in blossom they are scarcely recognizable from one another.

Virginian Speedwell (V. virginica—Leptandra) has an exceedingly erect habit of growth. The foliage is arranged in threes

Virginian Speedwell (Veronica (Leptandra) virginica).

or fours, lanceolate, and acuminate, of a brownish-green colour; the stems are, in a vigorous-growing plant, terminated at a height of 3 ft. to 4 ft. by long single spikes of white flowers, whose beauty is enhanced by the chocolate-coloured anthers; its root-stalk is of slow growth, as regards lateral increase, so that propagation by frequent division ought to be avoided. It seeds freely and comes perfectly true in character. As a herbaceous plant its good qualities, especially as regards habit, cannot be over-estimated, and it should form an item in every collection.

Long-leaved Speedwell (V. longifolia), a well-defined species in which the usual opposite character of the foliage becomes almost or nearly alternate. The stems are erect, clothed as to their lower part with long lanceolate leaves, whose margins are regularly and distinctly serrated. It flowers in August and September, and is, like the last species, exceedingly variable in colour—sometimes blue, sometimes white, and at other times rose-coloured. It is a native of Southern Europe.

The Shrubby Group.

The shrubby group to which we now turn, and with which I shall deal very briefly, seeing that, however pretty and interesting they may be, their culture in this country as hardy plants is limited to the southern and western parts of Britain, and to a possibly somewhat larger area in Ireland. Amongst the most interesting we have the following:

Decussate Speedwell (V. decussata), of the Falkland Islands is a dense, compact-growing, evergreen shrub, flowering freely at the tops of the young shoots in the month of June. The flowers are white, the two protruding chocolate-coloured anthers adding much to their beauty; they are also deliciously fragrant.

Handsome Shrubby Speedwell (V. formosa, syn. diosmæfolia) has much smaller leaves than the preceding; it forms a twiggy shrub, of a lively green colour, producing near the tips of the shoots clusters of deep, bright blue flowers in the month of July. It is a native of Mount Wellington, in Van Diemen's Land. V. formosa Girdwoodiana is a hybrid form of the above, a stronger grower and more erect in habit; its flowers are produced in spikes.

Fleshy-leaved Speedwell (V. pinguifolia) is a compact shrubby plant, with glaucous-rounded leaves, producing white flowers freely at the top of the small shoots; it is, we believe, perfectly hardy, even at Edinburgh, and is a native of New Zealand.

Willow-leaved Speedwell (V. salicifolia) has narrow, linear-lanceolate foliage of a brownish tinge; the naked flower-spikes, about 2 in. long and covered with pretty white flowers, are produced from the axils of the upper leaves in August and September, when it forms a very pretty feature, and may be treated with advantage as a half-hardy bedding plant. V. salicifolia Lindleyana has broader leaves, and produces much more massive spikes of blue flowers. I apprehend this is nothing more than a seminal variety.

Beautiful Speedwell (V. speciosa).—This has broadly ovate, leathery, brown leaves of large size; its flowers are produced in massive, dense clusters or spikes; they are of a purple colour, and have a wonderfully effective character. Its natural time for blooming is in the autumn, but owing to the mode of culture it may be had in blossom during the winter and spring, when it forms a valuable plant for the decoration of the conservatory. Several much-improved varieties, such as V. imperialis and V. elegantissima, have so far superseded the old species that it is rarely met with now in cultivation. It is a native of Van Diemen's Land.

Panicled Speedwell (V. Hulkieana).—This has large, broad, fleshy leaves, almost cordate, and crenately notched along the margin. The flowers are of a light lavender colour, arranged in terminal branching panicles. Though not a very showy plant, it is, when grown well and vigorously, far from unattractive, but it wants treatment of the most liberal kind in order to secure this result.

Box-leaved Speedwell (V. buxifolia).—This is a twiggy little plant with small Box-like foliage. It is said to be one of the hardiest of the shrubby kinds. I have had as yet no opportunity of testing it, nor indeed have I seen any account of its having bloomed, so I must leave its further descriptive character to some future delineator of this interesting genus, the somewhat lengthy history of which I now bring to a close. Jas. C. Niven.

Hull Botanic Gardens.

Self-fertilization of Plants.—Mr. Thomas Meehan, continuing his observations on this subject, has found that the flower of Campanula pulcherrima, when confined in fine gauze bags, seeded perfectly; the method of this self-fertilization he has not discovered. He has observed the self-fertilization of Chicory, which has rather large white pollen grains. The whole process takes about two hours. About six o'clock in the morning the pistil with closed stigmatic lobes elongates, pushing through the mass of pollen, and carrying quantities with it. About an hour after the stigmatic lobes expand,

and the pollen falls into the cleft and on to the stigmatic surface. The flowers close entirely by nine or ten o'clock of the same day. No doubt pollen-eating insects visited the flowers, but when these were carefully excluded, all the flowers had pollen on their stigmatic surfaces, nevertheless.

Propagation of Hyacinths by their Leaves.—According to Mr. Barleben, gardener to the Berlin University, Hyacinths may be propagated by their leaves, and this method would appear to specially recommend itself where the object in view is to raise a large number of specimens of new or rare varieties. The leaves, we are told, should be cut off as near to the bulb as possible, put in a saucer, and covered over with a thin layer of sandy leaf-mould. The saucer having been placed in a greenhouse or frame, close to the inner surface of the glass, in eight or nine weeks' time the extremities of the leaves will begin to turn dry, a sure sign that bulbs are growing out of them. The leaves selected for propagation must be fresh and green, the latest time at which they should be removed from the plant being the close of the flowering period. Mr. Barleben has likewise made experiments to ascertain whether it is possible to propagate the Hyacinth by cuttings from the stem, and sure enough, after a time, small bulbs developed themselves from the same. Mr. Hooibrenk, of Hietzing, going still further, has attempted to produce new varieties by crossing the sap in the leaves of one sort of Hyacinth by sap taken from another.

The Scholar's Handbook of Household Management and Cookery.*—Mr. Tegetmeier once wrote a very useful and popular "Manual of Domestic Economy," and no better selection than he could have been made for the authorship of the present small volume. This was written at the request of the School Board for London as a scholar's handbook on the general principles on which the processes of cookery and the sanitary management of a home depend. Mr. Tegetmeier protests strongly (p. 65) against the now too common habit of allowing children to take stimulants. The part devoted to household management—firing, lighting, &c.—is the best, and an appendix of receipts used by the teachers of the National School of Cookery will be found useful. It is published by Macmillan.

ROYAL HORTICULTURAL SOCIETY AND GUINEA FELLOWSHIPS.

SHOULD be much obliged if you or any of your readers would give me any suggestions as to how best to waken up the great body of horticulturists throughout the country, the number of names of would-be Fellows is rather slackening; yesterday only five came in, they were indeed good ones, and two of them ladies; but, at this rate, we shall be too long in making up the required number. I am frequently told that my correspondents have many friends who will come in as soon as the thing is fairly started; allow me to urge most strongly, that the way to get a thing done is to do it; a sufficient number of suitable names of would-be Fellows once collected, and we have the foundation of a strong, lasting society, ready to be set to work when the time of freedom comes. We have now a long and most influential list, and we might get the benefit of its influence by publishing it, or a selection from it. A refreshing letter frequently comes in as follows:—"During the autumn our mutual friend, Mr. —— gave me one of your circulars respecting the Royal Horticultural Society, and I have delayed responding to it till I could see how matters were likely to terminate. I now see and hope that you are in a fair way of accomplishing your object, and I therefore beg that my name may appear as a Patron Fellow of four guineas, as one who has been a Fellow for a great number of years; at the same time I cannot let this opportunity pass without recognizing the services of a very able and scientific gardener who has served me for between twenty and thirty years, and who has done good service to horticulture, and I therefore beg that you will put the name of Mr. —— as Patron Fellow of four guineas on the list." The writer of the above is the owner of a very beautiful and well-known place, and his gardener one of the best in the country. To fill up the list rapidly, every horticulturist who thinks well of the movement (and my name-book shows that these are very numerous) ought to set herself or himself the task of bringing in one or two Fellows and urge these to do likewise, and so on. I shall be only too glad to send, on application, any number of circulars to aid the canvass, but for the first start we want personal influence in a great many districts. GEORGE F. WILSON.

Heatherbank, Weybridge Heath.

WEST LONDON ENTOMOLOGICAL SOCIETY.

THIS Society, which is composed entirely of working men who devote their leisure time to collecting insects, plants, fungi, and similar objects, held their fourth annual exhibition in the large room attached to St. Mark's Institute, George Street, Oxford Street, on the 7th and 8th inst. The gem of the exhibition in the botanical way was a collection of fungi preserved in their natural colours by Mr. English, of Epping, by a peculiar process of which he is the inventor. The brilliant colours and natural characters of all the specimens (forty-three in number, and ranging from Agaricus to Xylaria) were wonderfully preserved, the dull red of Russula alatacea, the more brilliant hue of Agaricus muscarius, the purple-pink of Russula fragilis, the delicate yellow of Boletus parasiticus, the rosy-pink of Russula rosaria, and the bright orange of Agaricus fascicularis shading off into yellow, being especially conspicuous for their beauty and freshness. Mr. H. Silcock's collection (249 species of British Lepidoptera, the major portion of which were collected within a 1s. 6d. cab fare of Charing Cross) carried off the palm amongst the insects; and Mr. Gates came in a good second with a small collection of butterflies and moths with their caterpillars and pupæ.

OBITUARY.

WE have to record with much regret the death of Mr. Peter Stewart, which took place at The Glen, near Dalkeith, on the 22nd inst. Mr. Stewart was one of our youngest and best gardeners, and one who has taken more first prizes for fruit at Edinburgh and elsewhere than most men.

Scarcity of Holly Berries.—The scarcity of these, as Mr. McNab observes (see p. 577), is remarkable. I never remember such a failure before. From a great extent of shrubbery to select from we have none in this part of Suffolk worth cutting for decoration, and have to trust to the fruit of the Pyracantha and that of the Gladwin to supply their place, also to artificial Holly berries, for which there is at present a large demand.—J. GROOM, *Henham.*

—— I have observed and remarked upon the scarcity of Holly berries in this district, their absence being almost complete. With respect to the cause of this phenomenon, I incline to think, with Mr. McNab that it is probably to be sought for in the unusually severe frosts of April last, which destroyed the incipient bloom. — A. STANSFIELD, *Kersal Moor, Higher Broughton, Manchester.*

Mushrooms in Anglesea.—In my kitchen garden was a heap of spent manure that had been round some Seakale-pots in spring, and this heap has been producing delicious Mushrooms for the last three months. I gathered the last of them on the 20th of this month. I wanted to spread the manure and trench it in then, and when spreading it I found plenty of spawn.—W. L. D.

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